E. “Kika” de la Garza Plant Materials Center

2007 Annual Technical Report

USDA-NRCS
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2007

Annual Technical Report

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2007 Annual Technical Report
Kika de la Gaza Plant Materials Center, Kingsville, Texas

INTRODUCTION

The Kika de la Garza Plant Materials Center (PMC) located at Kingsville, Texas was established in April 1981. The PMC is operated by the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), formerly the Soil Conservation Service, in cooperation with an Advisory Board from Texas A&M University-Kingsville, the Caesar Kleberg Wildlife Research Institute (CKWRI), the South Texas Association of Soil and Water Conservation Districts (STASWCD), and the Gulf Coast Association of Soil and Water Conservation Districts (GCSWCD). The Advisory Board provides overall guidance and direction toward meeting the Plant Material Center's objectives.

The objective of the Plant Materials Program is to provide cost effective vegetative solutions for soil and water conservation problems. This means identifying plants for conservation use, developing techniques for their successful use, providing for their commercial increase, and promoting their use in natural resource conservation and other environmental programs.

LOCATION AND FACILITIES

The Kika de la Garza PMC is located just outside of Kingsville on 76 acres of land leased from Texas A&M University-Kingsville and 15 acres leased from the King Ranch. The soils at the PMC are Raymondville clay loam and Victoria clay. The King Ranch annex has Delfina fine sandy loam soil and Willacy fine sandy loam soil. Topography of the PMC is flat.

Facilities consist of an office, greenhouse, seed cleaning barn, seed storage building, shop and equipment storage barn, and a fuel and pesticide storage complex. Limited irrigation water is available from a shallow pond located at the PMC and is for furrow irrigation. Specialized hydroponic tanks are located at the PMC for use in production and evaluation of aquatic plants.

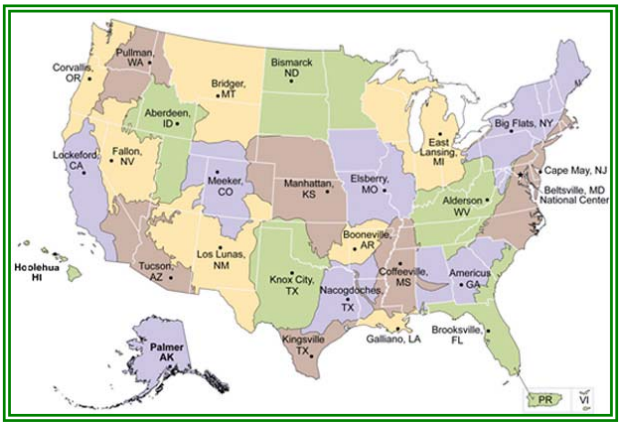
INTERNET

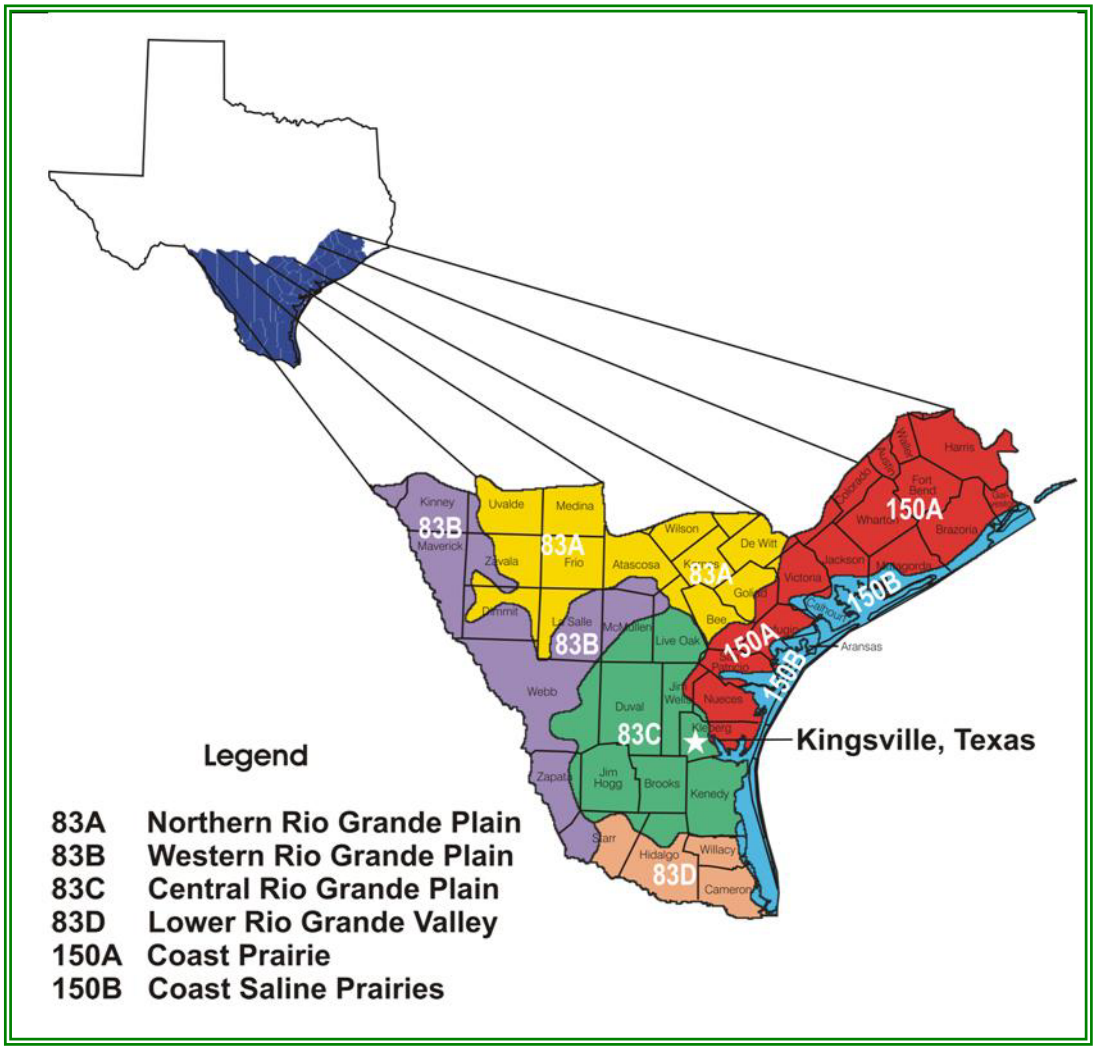
You can access our website on the internet to find information about the Plant Materials Center. Information and publications will be added to our home page periodically. The website address is accessed through

http://www.tx.nrcs.usda.gov or http://plant-materials.nrcs.usda.gov.

SERVICE AREA

The E. “Kika” de la Garza PMC is one of 27 centers located throughout the United States. The PMC is operated by the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), in cooperation with an Advisory Board from Texas A&M University-Kingsville, the Caesar Kleberg Wildlife Research Institute (CKWRI), South Texas Association of Soil & Water Conservation Districts, and the Gulf Coast Association of Soil & Water Conservation Districts. The Kika de la Garza PMC serves approximately 27 million acres of the southern portion of Texas.



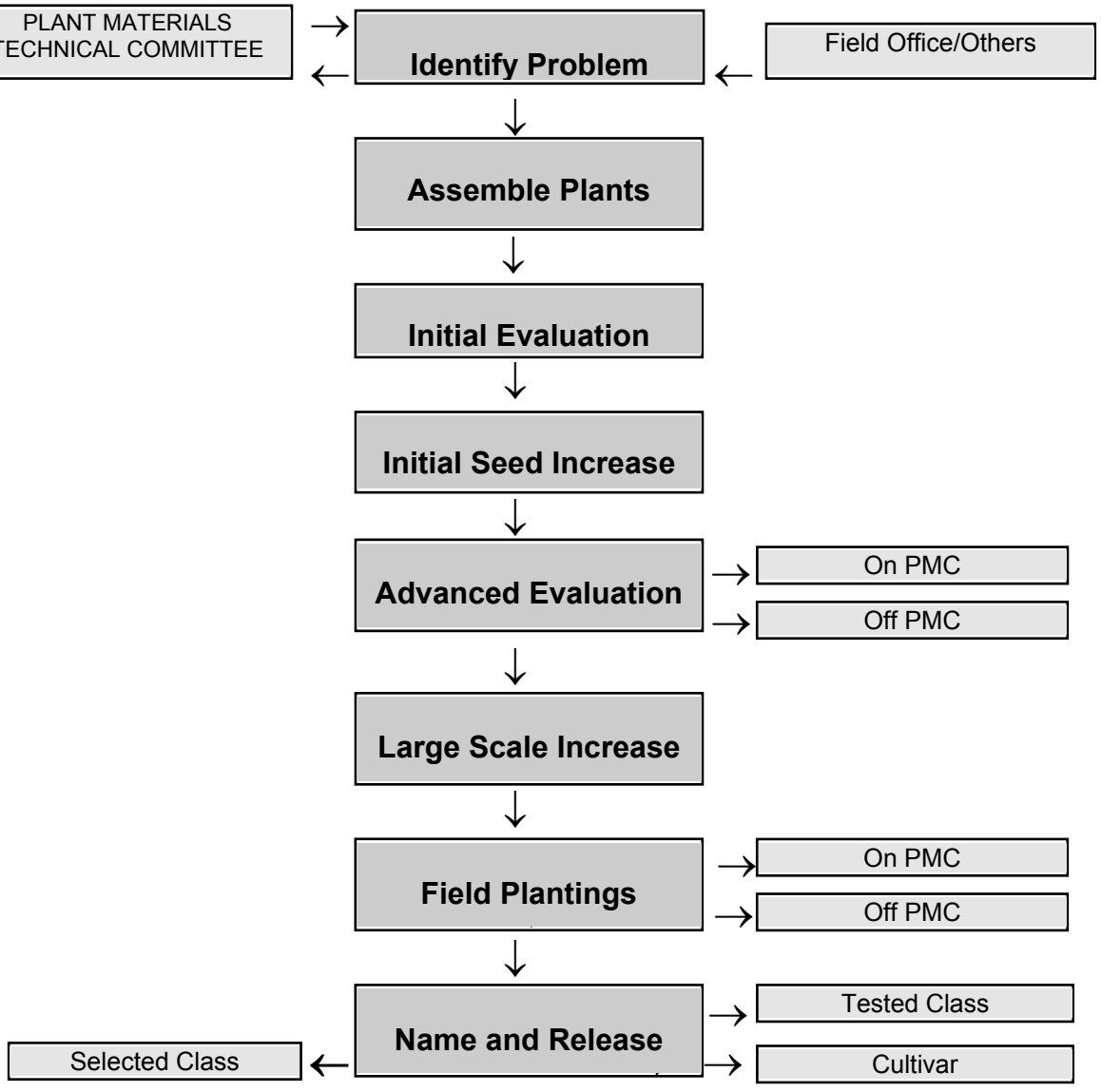


CLIMATE DATA

	TEMPERATURE °F				RAINFALL (inches)	
MONTH	HISTORICAL AVG.	2007 MONTHLY AVG.	2007 MAX	2007 MIN	HISTORICAL AVG.	2007 MONTHLY TOTAL
JANUARY	56.8	54	84	32	1.71	4.14
FEBRUARY	60.2	60	93	29	1.62	0.10
MARCH	66.9	70	89	32	0.86	1.90
APRIL	73.4	70	93	40	1.50	1.91
MAY	78.4	78	92	60	2.58	7.83
JUNE	82.9	-	95	72	3.05	1.08
JULY	84.9	82	96	70	2.13	19.91
AUGUST	84.9	84	98	73	2.72	3.68
SEPTEMBER	81.3	-	94	68	4.47	4.01
OCTOBER	73.8	-	92	44	3.17	0.53
NOVEMBER	65.0	-	90	35	1.26	0.29
DECEMBER	58.8	-	86	33	1.13	0.63
				TOTAL	**26.20**	**46.01**

PLANT MATERIALS PROGRAM
PLANT RELEASE PROCESS

The Plant Materials Program has established a systematic process to evaluate and release plants to address the conservation problems outlined in the long-range program. The intensity and time of evaluation will vary according to the class of release. A cultivar will require many years (10-15) of intense evaluation whereas a selected class plant can be released in 3-4 years with little evaluation. The following flow chart illustrates the steps involved in this process.



LONG RANGE PROGRAM

PRIORITIES:

The Kika de la Garza Plant Materials Center's long range program has identified four high priority conservation needs to direct the operations at the PMC. These priorities have been established by the recommendations of the PMC Advisory Board, PMC Plant Technical Committee and Field Office surveys.

-Plant selection and cultural techniques to supply a better diversity of native forage for livestock.

-Plant selection and cultural techniques for addressing shoreline erosion and water quality issues of coastal and inland areas.

-Plant selection and cultural techniques to supply food, cover, and habitat for wildlife.

-Plant selection and cultural techniques for ecosystem restoration. Emphasis is on restoration sites with alkaline and saline soil problems, endangered species recovery and sand dune stabilization.

Native Forages

-Warm-season native grasses
-Cool-season native grasses
-Native Legumes

Erosion Control and Water Quality Improvement

-Evaluation of vegetative barriers for cropland and gully erosion control
-Plants for coastal shoreline erosion control
-Plants for coastal water quality improvement

Wildlife Habitat Improvement

-Plants for wildlife upland habitat
-Plants for coastal waterfowl habitat

Ecosystem Restoration

-Plant selection and cultural techniques for ecosystem restoration
-Plants for alkaline and saline soils
-Techniques for the restoration of endangered plant species

Initial Evaluation Projects

Study Number: 77IO16H

Study Title: Assembly and Evaluation of Four Flower Trichloris (*Trichloris pluriflora*)

Introduction: Four flower trichloris (*Trichloris pluriflora*) is a warm-season perennial bunch grass native to Texas (Hitchcock, 1971). It is of particular interest because USDA-NRCS soil surveys have reported that four flower trichloris is one of two co-dominant climax species on numerous range sites in South Texas. Four flower trichloris is also known as multi-flowered false rhodesgrass (Gould, 1975). Four flower trichloris grows on plains and in dry woods in south Texas, Mexico, and in southern South America (Correll and Johnston, 1996; Hitchcock, 1971). Although the presence of four flower trichloris is considered to be an indicator of good range condition, there is no known commercial variety of this species.

Problem: There is a need for native, adapted seed available at a reasonable price for the restoration and reclamation of habitat in the South Texas Region.

Objective: The objective is to assemble, evaluate, select and release, and/or provide information on the propagation of four flower trichloris. Four flower trichloris collections will be evaluated for adaptation in two South Texas Ecoregions, the sandy soil region known as the South Texas Sand Plain and the broad mixed-soil region known as the Rio Grande Plain.

Discussion: At the end of 2006, there were thirty-four accessions of four-flowered trichloris in the Rio Grande Plain Ecoregion plot. In June 2005, a complete harvest was collected in both the Rio Grande Plain Ecoregion and South Texas Sand Plain plots. In November 2005, a seed sample was taken from each accession. These harvests were germination tested in 2007 (Tables 1 & 2). In May and September of 2007, Rio Grande ecoregion plot was evaluated for field performance (Table 3). A few of the accessions exhibited higher density, vigor, and seed production. In May and September of 2007, a seed sample was taken from each accession in the Rio Grande Plain Ecoregion plot. These harvests will be germination tested in 2008. The seed increase of 8252 was taken out in October of 2007 due to contamination by silver bluestem.

In October of 2007, 32 accessions of four-flowered trichloris were sent to Valerie Hipkins of the U.S. Forest Service, National Forest Genetics Laboratory in Placerville, CA. These accessions will be analyzed for chromosome number and for genetic variance within and between collections. (See technology folder for more information.) After results are obtained, they will be compared, along with field evaluations and germination tests by the PMC and STN, to select accessions for a large based ecotype blend.

Table 1. Study 77IO16H Four Flower Trichloris 2005 Harvest Germination

Annex (sandy soil)

Accession Number	Origin (County)	Date Harvested	Grams Harvested	3 Days %	7 Days %	28 Days %
9086181	Jim Wells	6/17/2005	19.0	8.6	18.0	26.7
9086183	Kleberg	6/17/2005	25.0	17.3	34.7	37.3
9086184	Jim Wells	6/17/2005	6.0	1.3	11.3	14.0
9086185	Jim Wells	6/17/2005	18.0	10.7	33.3	43.3
9086211	Kleberg	6/17/2005	19.0	8.7	20.0	24.0
9086212	Kleberg	6/17/2005	67.0	12.7	37.3	42.7
9086181	Jim Wells	11/9/05	sample	2.7	6.0	12.7
9086183	Kleberg	11/9/05	sample	4.0	11.3	15.3
9086184	Jim Wells	11/9/05	sample	10.0	13.3	18.0
9086185	Jim Wells	11/9/05	sample	7.3	14.7	26.7
9086211	Kleberg	11/9/05	sample	12.0	22.7	28.0
9086212	Kleberg	11/9/05	sample	4.7	10.7	15.3

***12 hours dark 20°C (68°F) / 12 hours light 30°C (86°F)

Table 2. Study 77IO16H Four Flower Trichloris 2005 Harvest Germination

Block E (clay soil)

Accession Number	Origin (County)	Date Harvested	Grams Harvested	3 Days %	7 Days %	28 Days %
9038717	Jim Wells	6/20/2005	32.0	0.7	10.7	16.0
8252	Willacy	6/20/2005	34.0	9.3	41.3	44.7
9045782	Starr	6/20/2005	46.0	2.7	28.0	32.0
9064432	Starr	6/20/2005	41.0	0.7	24.0	27.3
9052756	Duval	6/20/2005	34.0	0.0	25.3	30.7
9043300	Frio	6/20/2005	69.0	8.7	32.0	38.7
9043207	La Salle	6/20/2005	31.0	1.3	14.0	25.3
9043279	Cameron	6/20/2005	32.0	1.3	43.3	51.3
9045811	Karnes	6/20/2005	46.0	18.7	50.7	54.7
9089091	Dimmit	6/20/2005	10.0	2.0	17.3	19.3
9090655	Live Oak	6/20/2005	10.0	1.3	8.0	10.0
9090721	Wilson	6/20/2005	missing	-	-	-
9091844	Hidalgo	6/20/2005	61.0	4.0	36.7	44.7
9086181	Jim Wells	6/20/2005	22.0	6.0	32.0	40.0
9086182	Zavala	6/20/2005	36.0	2.7	35.3	38.0
9086184	Jim Wells	6/20/2005	15.0	6.0	28.7	31.3
9086185	Jim Wells	6/20/2005	25.0	6.7	44.0	59.3
9086186	Jim Wells	6/20/2005	24.0	10.0	32.7	39.3
9091809	Jim Hogg	6/20/2005	31.0	8.7	50.0	57.3
9090594	Maverick	6/20/2005	35.0	15.3	42.0	46.7
9090579	La Salle	6/20/2005	29.0	8.0	32.7	36.7
9088772	Webb	6/20/2005	26.0	23.3	38.0	38.0
9090364	Willacy	6/20/2005	17.0	32.0	62.0	65.3
9090413	Medina	6/20/2005	22.0	21.3	65.3	70.7
9091884	Brooks	6/20/2005	19.0	3.3	40.0	49.3
9090315	Wilson	6/20/2005	9.0	8.7	37.3	47.3
9093192	Webb	6/20/2005	14.0	14.0	54.7	61.3
9090281	Hidalgo	6/20/2005	14.0	20.0	70.0	72.0
9091883	Kenedy	6/20/2005	11.0	13.3	57.3	64.0
9088560	Dimmit	6/20/2005	27.0	9.3	49.3	54.7
9089128	Medina	6/20/2005	102.0	18.7	42.0	42.0
9090548	Duval	6/20/2005	64.0	6.7	34.7	43.3

***12 hours dark 20^{o}C (68^{o}F) / 12 hours light 30^{o}C (86^{o}F)

Table 2. Study 77IO16H Four Flower Trichloris 2005 Harvest Germination (continued)

Block E (clay soil)

Accession Number	Origin (County)	Date Harvested	Grams Harvested	3 Days %	7 Days %	28 Days %
9038717	Jim Wells	11/9/05	sample	0.0	22.7	29.3
8252	Willacy	11/9/05	sample	0.0	20.0	23.3
9045782	Starr	11/9/05	sample	0.0	24.0	26.0
9064432	Starr	11/9/05	sample	0.0	19.3	26.0
9052756	Duval	11/9/05	sample	-	22.0	28.0
9043300	Frio	11/9/05	sample	-	16.7	29.3
9043207	La Salle	11/9/05	sample	-	26.7	40.0
9043279	Cameron	11/9/05	sample	-	22.7	38.7
9045811	Karnes	11/9/05	sample	-	14.0	22.0
9089091	Dimmit	11/9/05	sample	-	16.0	22.0
9090655	Live Oak	11/9/05	sample	-	32.7	36.7
9090721	Wilson	11/9/05	sample	-	25.3	26.7
9091844	Hidalgo	11/9/05	sample	-	32.0	38.7
9086181	Jim Wells	11/9/05	sample	-	15.3	19.3
9086182	Zavala	11/9/05	sample	-	10.7	16.7
9086184	Jim Wells	11/9/05	sample	-	14.7	22.7
9086185	Jim Wells	11/9/05	sample	9.3	33.3	45.3
9086186	Jim Wells	11/9/05	sample	6.7	9.3	13.3
9091809	Jim Hogg	11/9/05	sample	12.7	24.0	30.0
9090594	Maverick	11/9/05	sample	8.7	14.0	17.3
9090579	La Salle	11/9/05	sample	2.0	6.7	10.0
9088772	Webb	11/9/05	sample	5.3	14.0	20.7
9090364	Willacy	11/9/05	sample	12.0	28.0	35.3
9090413	Medina	11/9/05	sample	6.7	12.7	15.3
9091884	Brooks	11/9/05	sample	11.3	12.7	21.3
9090315	Wilson	11/9/05	sample	15.3	18.7	28.0
9093192	Webb	11/9/05	sample	9.3	16.0	20.0
9090281	Hidalgo	11/9/05	sample	34.7	38.7	45.3
9091883	Kenedy	11/9/05	sample	22.0	32.0	38.0
9088560	Dimmit	11/9/05	sample	11.3	20.0	23.3
9089128	Medina	11/9/05	sample	21.3	27.3	28.0
9090548	Duval	11/9/05	sample	29.3	48.0	55.3

***12 hours dark 20°C (68°F) / 12 hours light 30°C (86°F)

Table 3. Study 77IO16H Four Flower Trichloris Initial Field Evaluation - 2007

Rio Grande Plains Ecotype - PMC (clay soil)

Accession Number	Origin (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production
9038717	Jim Wells	100	100	5.0	5.0	5.0	5.0	5.0
8252	Willacy	66	100	5.5	4.5	5.0	5.0	4.5
9045782	Starr	92	100	5.0	5.0	5.0	5.0	5.0
9064432	Starr	98	100	5.0	5.0	5.0	5.0	5.0
9052756	Duval	94	100	5.0	5.0	5.0	5.0	5.0
9043300	Frio	100	100	4.5	5.0	5.0	5.0	4.5
9043207	La Salle	100	100	5.0	4.5	5.0	5.0	4.5
9043279	Cameron	96	100	4.5	4.5	5.0	5.0	4.5
9045811	Karnes	96	100	4.0	4.0	5.0	5.0	5.0
9089091	Dimmit	94	100	4.0	4.0	5.0	5.0	4.5
9090655	Live Oak	100	100	5.0	4.5	5.0	5.0	4.5
9090721	Wilson	100	100	5.0	4.5	5.0	5.0	4.5
9091844	Hidalgo	98	100	5.0	5.0	5.0	5.0	5.0
9086181	Jim Wells	98	100	5.0	5.0	5.0	5.0	4.5
9086182	Zavala	100	100	5.0	5.0	5.0	5.0	5.0
9086184	Jim Wells	96	100	5.0	4.5	5.0	5.0	5.0
9086185	Jim Wells	100	100	5.5	5.5	5.0	5.0	5.5
9086186	Jim Wells	100	100	5.0	5.0	5.0	5.0	5.0
9091809	Jim Hogg	100	100	5.0	5.0	5.0	5.0	4.5
9090594	Maverick	100	100	5.0	5.0	5.0	5.0	4.5
9090579	La Salle	100	100	5.0	4.5	5.0	5.0	4.5
9088772	Webb	100	100	4.5	4.5	5.0	5.0	4.5
9090364	Willacy	100	100	4.5	5.0	5.0	5.0	4.5
9090413	Medina	100	100	4.0	4.5	5.0	5.0	4.5
9091884	Brooks	100	100	5.0	5.0	5.0	5.0	5.0
9090315	Wilson	100	100	5.0	4.5	5.0	5.0	5.0
9093192	Webb	100	100	4.5	4.5	5.0	5.0	4.5
9090281	Hidalgo	100	100	5.0	5.0	5.0	5.0	5.0
9091883	Kenedy	100	100	3.5	3.5	5.0	5.0	3.0
9088560	Dimmit	100	100	5.0	4.0	5.0	5.0	5.0
9089128	Medina	100	100	3.5	3.5	5.0	5.0	3.5
9090548	Duval	100	100	4.0	3.5	5.0	5.0	3.5
9086211	Kleberg	-	100	4.0	3.5	5.0	5.0	4.0
9086212	Kleberg	-	100	5.0	3.5	5.0	5.0	4.0

*Ocular estimate (1 = Best)

Study Number: 77IO28CL

Study Title: Assembly and Evaluation of Seacoast Bluestem (*Schizachyrium littorale*)

Introduction: Seacoast bluestem (*Schizachyrium littorale*) is a native, perennial, rhizomatous, warm-season grass. Its previous scientific name, *Schizachyrium scoparium* var. littoralis, described it simply as a variation of little bluestem. It has previously been included under the genus Andropogon as *Andropogon littoralis* Nash (Gould,1975) and *Andropogon scoparium* var. littoralis (Nash) Hitchc. (Correl & Johnston,1996). Although currently treated as its own genus, Schizachyrium is closely related to the genus Andropogon. It has been separated mainly on the basis of a single rachis per inflorescence, as opposed to at least two in the Andropogon. Other close relatives include the genera *Dichanthium* and *Bothriochloa* (Correl & Johnston, 1996). All four genera bear the common name of Bluestem (Gould 1975). This presence of rhizomes is what most easily identifies it from little bluestem. The inflorescence blooms mainly from August to December and consists of numerous racemes 2.5-5 cm long (Gould, 1975).

Seacoast bluestem can be found along sandy shorelines of Lake Ontario in Canada, on sandy shores of Massachusetts and New York, south to North Carolina, along the sand dunes of Lake Michigan in Ohio and Indiana, and along the sandy gulf coast of South East Texas (Hitchcock, 1971). In Texas, it has also been known to grow as far inland as Jim Hogg county, and is common on the sandy shores of the barrier islands of the gulf coast south into Mexico (Correl & Johnston, 1996). It occurs in deep sand in the Gulf Prairies and Marshes and South Texas Plain regions of Texas, and is common on coastal sands near sea level in southern Texas (Gould, 1975).

Seacoast bluestem is usually the dominant forage grass throughout the Texas Coastal Prairie (Hutch, Schuster & Drawe, 1999). It provides good quality forage for livestock, poor forage for wildlife, but provides good cover (Hutch, Schuster & Drawe, 1999).

Problem: There is a need for native, adapted seed available at a reasonable price for the restoration and reclamation of habitat in the South Texas region.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of seacoast bluestem. Seacoast bluestem collections will be evaluated for adaptation in two South Texas Ecoregions: the sandy soil region known as the South Texas Sand Plain and the region along the Texas coast known as the Texas Coastal Prairie.

Discussion: At the end of 2007, there were eleven accessions of seacoast bluestem planted in the Texas Coastal Prairie Ecotype field plot, ten accessions in the South Texas Sand Plain Ecotype field plot, and seven accessions in a plot labeled “unknown bluestem”. Seed was collected in December 2005 from the Texas Coastal Prairie Ecotype field plot and was germination tested (Table 1). The South Texas Sand Plain plot did not produce a seed harvest in 2005.

Both seacoast bluestem ecoregion plots were evaluated for field performance in November 2007 (Table 2). A few accessions had better vigor, higher density, and more seed production. A seed sample was collected in November 2007. This harvest will be germination tested in 2008.

In previous years, the seed harvests of seacoast bluestem have had poor seed fill. To test if this is due to location, plants were sent to Katy, TX in 2007. No seed was produced in the fall of 2007. These plants will be harvested and the seed will be tested for fill in 2008 and 2009. Until the seed fill issue has been solved, this project will be on hold for selections.

No new accessions of seacoast bluestem were received in 2007. New accessions will be added to the plots as received.

Table 1. Study 77IO28CL Seacoast Bluestem 2005 Harvest Germination

Texas Coastal Prairie Ecotype - PMC (clay soil)

Accession Number	Origin (County)	Date Harvested	Grams Harvested	3 Days %	7 Days %	28 Days %
9088694	Aransas	12/13/2005	12.0	0.0	3.3	6.0
9076899	Calhoun	12/13/2005	19.0	0.0	6.0	8.0
9076898	Calhoun	12/13/2005	13.0	0.0	5.3	7.3
9076885	Calhoun	12/13/2005	3.0	0.0	0.7	1.3
9076886	Calhoun	12/13/2005	29.0	0.0	4.7	4.7
9086175	Kleberg	12/13/2005	32.0	0.0	4.7	16.7
9076894	Nueces	12/13/2005	24.0	0.0	6.7	11.3
9089221	San Patricio	12/13/2005	97.0	0.0	15.3	18.7
9090332	San Patricio	12/13/2005	54.0	0.0	20.0	21.3
9091767	Nueces	12/13/2005	no seed	-	-	-
9090299	Kleberg	12/13/2005	47.0	0.0	10.7	36.0

***12 hours dark 20°C (68°F) / 12 hours light 30°C (86°F)

Table 1. Study 77IO28CL Seacoast Bluestem Initial Field Evaluation

South Texas Sand Plain Ecotype - ANNEX (sandy soil)

Accession Number	Origin (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity*	Seed Production*
9064474	DeWitt	96	100	5.0	4.0	5.0	5.0	5.0
9064461	Zavala	38	100	5.0	5.0	5.0	5.0	7.0
9090280	Brooks	92	100	5.0	4.0	5.0	5.0	5.0
9086171	Kenedy	94	100	5.0	5.0	5.0	5.0	5.0
9090351	Willacy	94	100	5.0	5.0	5.0	5.0	5.0
9086173	Kenedy	86	100	4.0	4.0	5.0	5.0	4.0
9086174	Kenedy	90	100	4.0	5.0	5.0	5.0	4.0
9090349	Willacy	100	100	4.0	5.0	5.0	5.0	4.0
9086172	Kenedy	94	100	4.0	4.0	5.0	5.0	4.0
9090299	Kleberg	97	100	5.0	5.0	5.0	5.0	5.0

South Texas Sand Plain Ecotype – Unknown Bluestem - ANNEX (sandy soil)

Accession Number	Origin (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*
9091805	Jim Hogg	92	100	5.0	5.0	5.0	5.0	5.0
9090346	Jim Hogg	78	100	6.0	5.0	5.0	5.0	5.0
9091812	Jim Hogg	83	100	6.0	6.0	5.0	5.0	6.0
9086180	Jim Wells	71	100	6.0	5.0	5.0	5.0	5.0
9090464	Jim Wells	80	100	5.0	4.0	5.0	5.0	4.0
9090262	Brooks	59	100	5.0	5.0	5.0	5.0	5.0
9090280	Brooks	87	100	5.0	5.0	5.0	5.0	4.0

Table 1. Study 77IO28CL Seacoast Bluestem Initial Field Evaluation (continued)

Texas Coastal Prairie Ecotype - PMC (clay soil)

Accession Number	Origin (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*
9088694	Aransas	64	100	7.0	7.0	7.0	5.0	6.0
9076899	Calhoun	98	100	5.0	5.0	6.0	5.0	5.0
9076898	Calhoun	98	100	5.0	5.0	5.0	5.0	5.0
9076885	Calhoun	100	100	5.0	5.0	5.0	5.0	5.0
9076886	Calhoun	98	100	5.0	5.0	5.0	5.0	5.0
9086175	Kleberg	86	100	5.0	7.0	5.0	5.0	6.0
9076894	Nueces	66	100	6.0	6.0	8.0	5.0	6.0
9089221	San Patricio	92	100	5.0	5.0	5.0	5.0	5.0
9090332	San Patricio	88	100	5.0	5.0	5.0	5.0	5.0
9091767	Nueces	81	50	9.0	9.0	9.0	5.0	n/a
9090299	Kleberg	90	100	6.0	6.0	5.0	5.0	6.0

*Ocular estimate (1 = Best)

Study Number: 77I034J

Study Title: Assembly and Evaluation of Orange Zexmania (*Zexmania hispida*)

Introduction: Orange zexmania (*Zexmania hispida* (H.B.K.) Gray), also known as hairy wedelia (*Wedelia hispida)*, is a common, native, warm-season, perennial forb (Ajilvsgi, 1991). A member of the sunflower family (Asteraceae), it grows approximately 60 to 75 cm tall blooming from March to December (Jones, 1982). Its shrub-like form, bright yellow-orange flowers, and hardiness in both dry and moist conditions make it an attractive plant for landscape use. In addition, it is easily cultivated, and is often browsed by deer, sheep, and goats (Ajilvsgi, 1991). It is found in parts of Texas and Mexico. In Texas, it is found along the Edwards Plateau, the Rio Grande Plain, and less frequently in the Trans Pecos, and in the southern portions of north central and south east regions of Texas (Correll and Johnston, 1996).

Problem: There is a need for perennial forbs for range restoration, wildlife habitat and xeriscaping in South Texas.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of orange zexmania. Orange zexmenia collections will be evaluated for adaptation in the broad mixed-soil region known as the Rio Grande Plain.

Discussion: In December of 2006, four accessions out of fourteen were chosen by the PMC to include in a composite release, 9061276 (Val Verde Co.), 9064386 (Gonzales Co.), 9064456 (Goliad Co.), and 9064430 (Starr Co.). There were other accessions that had higher germination percentages and seed production, but these four accessions showed the most resistance and vigor after the fall rains, when the “heavy” clay soils of the PMC exhibited slow water infiltration, poor root oxygenation, and signs of cotton root rot on the orange zexmenia plants.

South Texas Natives (STN) also had two offsite evaluations of collections they had made since the original PMC Initial Evaluation plot was planted. They have twenty-three accessions under evaluation at TAES Uvalde and fourteen at Rio Farms. They chose their top four performing accessions, 9088799 (Webb Co.), 9089020 (Duval Co.), 9091935 (Jim Hogg Co.) and 9091956 (Bexar Co.), to also be included in the composite release.

Plants from all eight accessions were started in the greenhouse in December of 2006. Accession 9061276 (Val Verde Co.) was removed from the release due to a lack of plants and seed available. Five of the accessions were planted in a composite block from which to harvest breeder seed for release to seed dealers. This block was harvested in the fall of 2007. The seed will be tested in 2008. Since two accessions had limited original seed left, the plants were used for isolated seed increase plots in 2007 and then they will be added to the composite block in 2008. Five accessions were seeded in the greenhouse in December 2007 to add to the seed increase composite block. The release of Goliad Germplasm orange zexmenia is scheduled for 2008.

Study Number: 77I050JH

Study Title: Assembly and Evaluation of Native Legumes for South Texas

Introduction: Native, perennial legumes can add value to many range planting or wildlife food plots. First, most legumes provide a highly nutritious source of forage. Second, legumes help fix nitrogen in the surrounding soil thereby increasing the soil fertility of the planting site. Third, legumes can be used to add biodiversity to a site when planted with grasses and other forbs. Finally, legumes tend to have showy flowers and can add aesthetic value to a site, and be used in a native, perennial garden.

Problem: There is a need for native perennial legumes for range restoration, wildlife habitat and xeriscaping in South Texas. Currently, the only native legumes used in South Texas are partridge pea and Illinois bundleflower. Partridge pea is an annual species and Illinois bundleflower is a perennial species that has difficulties with survival and persistence in South Texas.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of native legumes. Native legume collections will be evaluated for adaptation throughout South Texas.

Discussion: For information on golden dalea, prairie acacia, desmanthus, and prairie clover see the individual species project reports.

Calliandra: Seed was harvested twice in 2005 and seed on the weed mat under the plants was vacuumed up in December of 2005. This harvest was germination tested in 2007 (Table 1). Scarification appeared to speed germination, but not greatly increase the final percent germination. The seed obtained off the mat had decreased germination, but it was still high. The observation plot of accession 909489 was taken out in 2007 to make room for a seed increase plot.

Table 1. Study 77I050JH – Calliandra 2005 PMC Harvest Germination

Harvest Date	Grams Harvested	Scarification	3 Days %	7 Days %	28 Days %
6-15-05	8	0	20.0	61.3	94.7
		1 sec	94.0	96.7	96.7
8-9-05	20	0	13.3	56.7	92.0
		1 sec	93.3	98.0	98.0
12-13-05 (off mat)	23	0	20.7	43.3	78.7
		1 sec	79.3	86.0	86.0

***12 hours dark 16°C (60°F) / 12 hours light 30°C (86°F)

Low Prairie Clover: This is a three foot tall, semi-woody, prairie clover species. Foliage production and density have been good over three years and its seed does not easily shatter. Scarifying seed in a sandpaper scarifier for 5 seconds seems adequate to achieve high germination in just 3 days.

Seed was collected in December of 2005 from the one accession under initial evaluation and was germination tested in 2007 (Table 2). Due to the potential of this species, a seed increase

plot was established in 2006. In December of 2006, 1.4 pounds of seed was collected from the 195 plants. This harvest was tested in 2007 (Table 2).

Another collection of this species was made in 2007 from Nueces county. It was seeded in the greenhouse in December of 2007 and had 96.5% germination within 30 days. It will be planted in isolation from the other plot in 2008. More collections for this species will be sought in 2008.

Table 2. Study 77I050JH – Low Prairie Clover PMC Harvest Germination

Harvest Date	Amount Harvested	Scarification	3 Days %	7 Days %	28 Days %
12-13-05	25 grams	0	0.7	1.3	3.3
		5 sec	86.0	91.3	92.7
12-6-06 S.I. plot	1.4#	0	2.0	5.8	26.8
		5 sec	68.8	90.0	90.0

***12 hours dark 16°C (60°F) / 12 hours light 30°C (86°F)

Sun Hemp: Accession 468956 of "Tropic Sun" *Crotalaria juncea* was sent by the Hawaii PMC in 2007 to be planted for observation. They wished to know if the South Texas growing season was long enough for this species to produce seed. This species is an erect, branching, fast growing, annual legume. Seed was tested and determined not to need scarification (92% germination). Seed was direct planted into the field. It obtained a height of 12 feet before it was harvested in December of 2007. It produced 20 pounds of seed that will be germination tested in 2008.

Study Number: 77I053H

Study Title: Assembly and Evaluation of Pink Pappusgrass (*Pappophorum bicolor*)

Introduction: Pink pappusgrass (*Pappophorum bicolor*) is a native, warm-season perennial bunchgrass (Gould, 1975). It is known as pink pappusgrass because its spikelets usually have 2-3 fertile flowers that are purpulish-pink in color (Correll and Johnston, 1996). Pink pappusgrass can be found in Texas, Arizona, and into Mexico (Hitchcock, 1971). In Texas, it can be found in the southern coastal region, the Rio Grande Plain, the Edwards Plateau, the Rolling Plains or Reddish Prairies, and in the southeast part of the Trans-Pecos region (Gould, 1975). Pink pappusgrass grows on open valley land, grassy plains, along moist stream banks, in waste places and along roadsides where it is moist (Correll and Johnston, 1996; Gould, 1975; Hitchcock, 1971).

Problem: There is a need for native, adapted seed available at a reasonable price for restoration and reclamation of habitat in the South Texas region.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of pink pappusgrass. Pink pappusgrass collections will be evaluated for adaptation in the broad mixed-soil region known as the Rio Grande Plain.

Discussion: Seed was collected from all accession of pink pappusgrass in the Rio Grande Plain Ecotype plot in June of 2005 and was germination tested in 2007 (Table 1).

In 2006, South Texas Natives chose 3 accessions (9088622-Dimmit Co., 9091841-Zapata Co., and 9088715-Webb Co.) to use in a whiplash pappusgrass release and 7 accessions (9088912-Dimmit Co., 9090520-Duval Co., 9090676-Maverick Co., 9090405-Kinney Co., 9098079-Webb Co., 9090481-Starr Co., and 9085324-Uvalde Co.) to use in a pink pappusgrass release. These accessions will be increased at Rio Farms in 2007 and the releases are planned for 2009.

Table 1. Study 77I053H Pink Pappusgrass – 2005 PMC Harvest Germination

Accession Number	Origin (County)	Date Harvested	Grams Harvested	3 Days %	7 Days %	28 Days %
9088540	Frio	6/26/2005	1.0	0.0	0.7	2.0
9088534	Zavala	6/26/2005	4.0	0.0	6.7	14.7
9091859	Zapata	6/26/2005	23.0	0.0	5.3	13.3
9090635	Kinney	6/26/2005	21.0	0.0	12.7	24.7
9088982	Uvalde	6/26/2005	33.0	0.0	2.7	14.0
9089000	LaSalle	6/26/2005	20.0	0.0	1.3	5.3
9088856	Webb	6/26/2005	13.0	0.7	9.3	20.0
9088858	Webb	6/26/2005	13.0	2.0	12.67	20.7
9088710	Webb	6/26/2005	13.0	0.0	3.3	6.0
9093175	Duval	6/26/2005	32.0	0.0	3.3	6.0
9086195	Zavala	6/26/2005	29.0	0.0	3.3	8.0
9086196	Zavala	6/26/2005	26.0	0.0	2.7	4.0

***12 hours dark 20°C (68°F) / 12 hours light 30°C (86°F)

Table 1. Study 77I053H Pink Pappusgrass – 2005 PMC Harvest Germination (continued)

Accession Number	Origin (County)	Date Harvested	Grams Harvested	3 Days %	7 Days %	28 Days %
9085241	Dimmit	6/26/2005	53.0	0.0	2.0	6.7
9085302	Duval	6/26/2005	64.0	0.0	0.7	0.7
9088715	Webb	6/26/2005	1.0	0.7	28.0	37.3
9088855	Webb	6/26/2005	15.0	0.0	5.3	9.3
9088567	Zavala	6/26/2005	4.0	0.0	3.3	10.7
9090627	Dimmit	6/26/2005	17.0	0.0	2.0	15.3
9090700	Frio	6/26/2005	41.0	0.0	0.7	4.7
9090676	Maverick	6/26/2005	18.0	0.0	8.7	18.7
9088785	Webb	6/26/2005	5.0	0.0	4.7	10.0
9090518	Frio	6/26/2005	6.0	0.0	12.7	28.0
9090500	Frio	6/26/2005	8.0	0.0	5.3	15.3
9090637	Kinney	6/26/2005	8.0	0.0	3.3	6.0
9091882	Dimmit	6/26/2005	no seed	-	-	-
9088995	Dimmit	6/26/2005	23.0	0.0	0.7	0.7
9090646	Kinney	6/26/2005	no seed	-	-	-
9089079	Webb	6/26/2005	11.0	0.7	13.3	26.7
9088954	Frio	6/26/2005	7.0	0.0	4.7	18.0
9085324	Uvalde	6/26/2005	13.0	0.0	4.0	14.0
9088620	Dimmit	6/26/2005	18.0	0.0	0.7	8.7
9088912	Dimmit	6/26/2005	14.0	0.0	4.7	11.3
9088627	Dimmit	6/26/2005	13.0	0.0	2.0	13.3
9088999	LaSalle	6/26/2005	18.0	0.0	3.3	15.3
9090674	Dimmit	6/26/2005	9.0	0.0	2.0	12.7
9088904	Dimmit	6/26/2005	14.0	0.0	2.7	6.7
9085257	Starr	6/26/2005	10.0	0.0	5.3	8.7
9086276	Atascosa	6/26/2005	3.0	5.3	40.7	55.3
9093174	Duval	6/26/2005	35.0	0.0	0.7	1.3
9086272	Atascosa	6/26/2005	10.0	0.0	16.7	38.7
9088622	Dimmit	6/26/2005	13.0	3.3	52.7	64.0
9091841	Zapata	6/26/2005	15.0	1.3	15.3	24.0
9088738	Jim Hogg	6/26/2005	15.0	0.7	1.3	2.7
9090583	Frio	6/26/2005	20.0	0.0	2.7	7.3
9090520	Duval	6/26/2005	14.0	0.0	11.3	19.3
9093185	Zapata	6/26/2005	16.0	0.0	0.7	3.3
9090519	Medina	6/26/2005	8.0	0.0	-	15.3
9091869	Zapata	6/26/2005	9.0	0.0	-	8.7
9088970	Frio	6/26/2005	6.0	0.0	4.0	7.3
9091895	Maverick	6/26/2005	6.0	0.0	2.7	4.7
9088639	Dimmit	6/26/2005	5.0	0.7	9.3	13.3
9090755	Frio	6/26/2005	20.0	0.0	2.7	5.3

***12 hours dark 20°C (68°F) / 12 hours light 30°C (86°F)

Study Number: STPMC-P-0134-WL

Study Title: Assembly and Evaluation of Bundleflower (*Desmanthus* spp.)

Introduction: Native, perennial legumes are a desirable addition to range plantings for two main reasons. First, they can help fix nitrogen in the soil. Second, they are a valuable food source for wildlife. Foliage is eaten by cattle and deer, and the seeds are eaten by quail, doves, and other wild birds. Several species of the genus *Desmanthus* are native to South Texas. 'Sabine' Illinois bundleflower (*D. illinoensis*) has been released by the USDA as a native Texas legume, but it is not well adapted to the South Texas climate. It tends to die off during the hot, dry Texas summers, acting more as an annual than a perennial. *Desmanthus velutinus*, *D. reticulatus*, and *D. virgatus* var. *depressus* are some species of interest. A particular focus will be on accessions adapted to the South Texas climate, with an upright growth form and good seed production that will facilitate large-scale seed harvest. We are currently collecting *Desmanthus* spp. from South Texas sites that have good seed production and an upright growth form, as well as evaluating existing collections of seed at the PMC.

Problem: There is a need for perennial native legumes for range restoration, wildlife habitat, and xeriscaping in South Texas.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of *Desmanthus* spp. *Desmanthus* spp. collections will be evaluated for adaptation in the broad mixed-soil region known as the Rio Grande Plain.

Discussion: In 2005, one superior performing accession, 9085381-Hidalgo, was chosen out of seventy-four original accessions of *Desmanthus* spp. Accession 9085381-Hidalgo had more regrowth, higher density, and better seed production. A seed increase plot of this accession was planted in June of 2006.

A second accession, 9090608-Maverick, was chosen to use in an AEP comparison with 9085381-Hidalgo. A seed increase plot was planted in April of 2007. Neither plot produced a significant seed crop in 2007. An AEP will be started as soon as sufficient seed is produced.

Study Number: STPMC-P-0135-RA

Study Title: Assembly and Evaluation of Texasgrass (*Vaseyochloa multinervosa*)

Introduction: Texasgrass (*Vaseyochloa multinervosa* (Vasey)Hitchc.) is a native, warm-season, rhizomatous, perennial bunchgrass (Correll and Johnston, 1996). A member of the Festucaceae tribe of grasses, it can grow from 40-100 cm. tall (Hitchcock, 1971). It flowers from April to November and has been reported only from the southeastern portion of Texas, although it may also be present along the coast of Tamaulipas, Mexico (Gould, 1975). Texasgrass prefers sandy soil, and may occur in sandy woods and open ground (Hitchcock, 1971), and on sandy riverbanks, coastal dunes, and sandy pastures (Gould, 1975). It is the only species in the monotypic North American genus *Vaseychloa* and appears to have no close relatives (Gould, 1975). Although it has been noted to be rare (Hitchcock, 1971), it is periodically abundant on local sites in the Coastal Bend region of Texas (Gould, 1975). Texasgrass provides a good to fair source of forage, and provides good wildlife cover (Hatch, Schuster, and Drawe, 1999). There is currently no known commercial variety of Texasgrass.

Problem: There is a need for native, adapted seed available at a reasonable price for the restoration and reclamation of habitat in the South Texas region.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of Texasgrass. Texasgrass collections will be evaluated for adaptation in the sandy-soil region known as the South Texas Sand Plain.

Discussion: At the end of 2005, there were 21 accessions of Texasgrass in evaluation at the Annex and 12 accessions in the Norias plot. Both plots had poor field performance again in 2006. It was agreed by both the PMC and South Texas Natives that this species would not be pursued for release at this time. The 2005 harvest of the Annex plot and the 2006 harvest of the Norias plot were germination tested in 2007 (Tables 1& 2). A plant fact sheet will be written and submitted in 2009.

Table 1. Study STPMC-P-0135-RA Texasgrass – 2005 PMC Harvest Germination

Accession Number	Origin (County)	Date Harvested	Grams Harvested	3 Days %	7 Days %	28 Days %
9043289	Starr	6/17/2005	<1	13.1	86.0	90.0
9045785	Starr	6/17/2005	<1	0.0	71.8	77.7
9053724	Jim Hogg	6/17/2005	<1	0.0	59.8	63.5
9086162	San Patricio	6/17/2005	1.0	8.0	82.0	82.0
9086218	Kleberg	6/17/2005	1.0	20.	82.0	86.0
9086136	Kleberg	6/17/2005	1.0	0.7	48.7	79.3
9086161	Kleberg	6/17/2005	3.0	2.0	80.7	84.7
9090337	San Patricio	6/17/2005	1.0	3.3	68.7	79.3
9090279	Kleberg	6/17/2005	<1	no fill	no fill	no fill
43289	Starr	6/17/2005	29.0	3.3	84.0	87.3
9093207	Jim Hogg	6/17/2005	1.0	8.3	93.5	94.5
9091814	Brooks	6/17/2005	1.0	6.7	61.3	64.7
9093205	Jim Hogg	6/17/2005	3.0	1.3	69.3	76.0
9091802	Starr	6/17/2005	2.0	0.0	37.3	41.3
9091798	Jim Hogg	6/17/2005	1.0	4.5	53.7	72.0
9091768	Nueces	6/17/2005	1.0	0.0	28.6	9.0
9091866	Zapata	6/17/2005	1.0	0.0	0.0	0.0
9090355	Willacy	6/17/2005	4.0	5.3	62.0	68.0
9090466	Jim Hogg	6/17/2005	no seed	-	-	-
9093203	Jim Hogg	6/17/2005	1.0	0.0	69.3	74.7
9090756	Victoria	6/17/2005	no seed	-	-	-
9090292	Brooks	6/17/2005	1.0	4.7	56.0	64.0
9091761	Victoria	6/17/2005	no seed	-	-	-
9043289	Starr	12/15/2005	6.0	0.0	86.0	86.7
9045785	Starr	12/15/2005	7.0	0.0	84.0	86.0
9053724	Jim Hogg	12/15/2005	13.0	0.0	77.3	78.0
9086162	San Patricio	12/15/2005	62.0	0.0	84.0	85.3
9086218	Kleberg	12/15/2005	75.0	0.0	84.7	86.7
9086136	Kleberg	12/15/2005	1.0	no fill	no fill	no fill
9086161	Kleberg	12/15/2005	72.0	0.0	65.3	66.7
9090337	San Patricio	12/15/2005	184.0	0.0	89.3	89.3
9090279	Kleberg	12/15/2005	78.0	0.0	74.0	76.7
43289	Starr	12/15/2005	96.0	0.0	89.3	91.3
9093207	Jim Hogg	12/15/2005	49.0	0.0	78.0	79.3
9091814	Brooks	12/15/2005	28.0	0.0	88.7	90.0
9093205	Jim Hogg	12/15/2005	56.0	0.0	73.3	75.3
9091802	Starr	12/15/2005	32.0	0.0	71.3	76.0
9091798	Jim Hogg	12/15/2005	40.0	0.0	78.7	81.3
9091768	Nueces	12/15/2005	22.0	0.0	47.3	52.0
9091866	Zapata	12/15/2005	3.0	0.0	59.3	64.0
9090355	Willacy	12/15/2005	14.0	0.0	91.3	92.7
9090466	Jim Hogg	12/15/2005	34.0	0.0	82.7	82.7
9093203	Jim Hogg	12/15/2005	19.0	0.0	50.7	55.3
9090756	Victoria	12/15/2005	3.0	0.0	69.3	78.0
9090292	Brooks	12/15/2005	21.0	0.0	84.0	84.0
9091761	Victoria	12/15/2005	4.0	0.0	40.7	40.7

***12 hours dark 20°C (68°F) / 12 hours light 30°C (86°F)

Table 2. Study STPMC-P-0135-RA Texasgrass – 2005 Norias Harvest Germination

Accession Number	Origin (County)	Date Harvested	Grams Harvested	3 Days %	7 Days %	28 Days %
9090355	Willacy	10/27/2006	16	32.7	65.3	68.0
9090446	Jim Hogg	10/27/2006	7+mix	11.3	77.3	80.0
9093205 & 9090446	mixed during harvest	10/27/2006	42	0.0	61.3	68.7
9090756	Victoria	10/27/2006	12	14.0	86.7	88.0
9091768	Nueces	10/27/2006	11	8.7	92.7	94.0
9091798	Jim Hogg	10/27/2006	16	17.3	85.3	87.3
9091802	Starr	10/27/2006	18	0.7	34.0	36.0
9091814	Brooks	10/27/2006	16	27.3	84.7	87.3
9091866	Zapata	10/27/2006	15	2.7	83.3	87.3
9093203	Jim Hogg	10/27/2006	27	0.0	25.3	30.0
9093205	Jim Hogg	10/27/2006	<1+mix	15.1	53.2	55.0
9093207	Jim Hogg	10/27/2006	33	12.7	82.7	85.3
9091761	Victoria	10/27/2006	25	4.7	95.3	95.3
9090337	San Patricio	10/27/2006	20	2.7	76.0	78.7
9090279	Kleberg	11/13/2006	52	2.7	94.7	95.3
9090292	Brooks	10/27/2006	6	12.7	79.3	86.7

***12 hours dark 20^{o}C (68^{o}F) / 12 hours light 30^{o}C (86^{o}F)

Study Number: STPMC-P-0137- RA

Study Title: Rio Grande Plain Ecotype Project

Introduction: An initiative was developed in August of 2000 and is spearheaded by Caesar Kleberg Wildlife Research Institute to develop and promote native plants for the restoration and reclamation of habitat on private and public lands in South Texas. The goal of the initiative called the South Texas Natives Project is to provide economically viable sources of plants and seeds and to develop effective planting strategies for the restoration of South Texas plant communities.

Problem: There is a need for native adapted ecotypic plants for range restoration, wildlife habitat, and xeriscaping in South Texas.

Objective: The PMC will establish a seed nursery for South Texas ecotypes of a variety of grasses, forbs, and legumes. Ecotypes will be developed for the Rio Grande Plain ecoregion. The ecotype region was established to be large enough to retain regional integrity and genetic adaptability. The seed nursery will consist of approximately 50 plants per collection of 20 collections of each species. The nursery will consist of transplants that are isolated as necessary to maintain species integrity and diversity. The seed nursery will be hand harvested to ensure a complete spectrum of seed is harvested from each species. The nursery seed will be planted in production fields where it will then be harvested and bulked per species. The ecoregion seed will then be made available to commercial seed growers.

Discussion: During 2001, 66 collections representing 9 species were collected for the Rio Grande Plain ecoregion. A small seed nursery was established consisting of the following species: four-flowered trichloris (*Trichloris pluriflora*), plains bristlegrass (*Setaria vulpiseta*), seacoast bluestem (*Schizachyrium littorale*), hooded windmillgrass (*Chloris cucullata*), brownseed paspalum (*Paspaulm plicatulum*), pink pappusgrass (*Pappophorum bicolor*), prairie acacia (*Acacia angustissima*), and orange zexmenia (*Wedelia texana*).

In 2002, 869 additional collections representing 97 species were collected for the Rio Grande Plain ecoregion. Throughout the spring and summer of 2002, the seed nursery was expanded to include 79 collections representing 15 species of the Rio Grande Plain ecoregion. The seed nursery included the following species: four flower trichloris, plains bristlegrass, seacoast bluestem, hooded windmillgrass, brownseed paspalum, pink pappusgrass, prairie acacia, orange zexmenia, silver bluestem (*Bothriochloa saccharoides*), Hall's panicum (*Panicum hallii*), green sprangletop (*Leptochloa dubia*), Texas grass (*Vaseyochloa multinervosa*), sideoats grama (*Bouteloua curtipendula*), slim tridens (*Tridens muticus*), and lovegrass tridens (*Tridens eragrostoides*).

Red grama (*Bouteloua trifida*) and hairy grama (*Bouteloua hirsuta*) accessions were germinated in the greenhouse in Spring 2002. Due to very low germination numbers, these accessions were not transplanted into the field.

In the winter of 2002, twenty-three species were seeded in the greenhouse for the Rio Grande Plain Ecotype project: silver bluestem, sideoats grama, hooded windmill grass, Engelmann's daisy (*Engelmannia peristenia*), awnless bush-sunflower (*Simsia calva*), green sprangletop, Hall's panicum, brownseed paspalum, hairy grama, slender grama (*Bouteloua repens*), Texas grama (*Bouteloua rigidiseta*), red grama, plains lovegrass (*Eragrostis intermedia*), curly

mesquite (*Hilaria berlangeri*), vine mesquite (*Panicum obtusum*), and Texas panicum (*Urochloa texana*).

One accession each of slender grama, hairy grama, Texas grama, and red grama were planted at the PMC to observe seed production characteristics. Only slender grama seemed to have characteristics that would allow it to compete with weeds and produce large quantities of harvestable seed. The other gramas in the plot were discontinued in February 2004.

The Texas panicum showed signs of chlorosis and seed shattered readily while still green. The lovegrass and slim tridens did not regrow well and had poor performance. These plots were discontinued.

In 2003, 370 additional collections representing 79 species were collected for the Rio Grande Plain ecoregion. Throughout the spring and summer of 2003, the seed nursery was expanded to include 168 collections representing 19 species of the Rio Grande Plain ecoregion. The seed nursery included the following species in 2003: four flower trichloris, plains bristlegrass, silver bluestem, Hall's panicum, green sprangletop, Texas grass, hooded windmillgrass, pink pappusgrass, prairie acacia, orange zexmenia, seacoast bluestem, sideoats grama, slim tridens, lovegrass tridens and Texas panicum. All accessions of Brownseed were moved to Beeville for evaluation (see brownseed project for details).

In the winter of 2003, twelve species were seeded in the greenhouse to add to the Rio Grande Ecotype project: Engelmann's daisy, awnless bush-sunflower, Blackfoot daisy (*Melampodium cinerum*), big bluestem (*Andropogon gerardii*), sideoats grama, green sprangletop (*Leptochloa dubia*), Hall's panicum, switchgrass (*Panicum virgatum*), little bluestem (*Schyzachyrium scoparium*), bristlegrass, yellow indiangrass (*Sorghastrum nutans*), plains lovegrass, and lovegrass tridens.

One accession of Blackfoot daisy was planted in Block C in May of 2004. Seed was collected from this accession in April and November of 2004. A new accession of lovegrass tridens, 9086199-Starr, was planted in Block F in June of 2004. Seed was harvested in November of 2004. These harvests were germination tested in 2005. Germination was poor (<10%).

In 2004, 157 additional collections representing 47 species were collected for the Rio Grande Plain ecoregion. Throughout the spring and summer of 2004, the seed nursery was expanded to include 256 collections representing 17 species of the Rio Grande Plain ecoregion. The seed nursery included the following species in 2004: four flower trichloris, plains bristlegrass, silver bluestem, Hall's panicum, green sprangletop, Texas grass, hooded windmillgrass, pink pappusgrass, prairie acacia, orange zexmenia, seacoast bluestem, sideoats grama, lovegrass tridens and Blackfoot daisy. All accessions of Brownseed were still located at Beeville.

In the winter of 2004, twenty species were seeded in the greenhouse to add to the Rio Grande Ecotype project including: awnless bush-sunflower, frostweed, blackfoot daisy, big bluestem, silver bluestem, sideoats grama, Arizona cottoptop (*Digitaria californica*), green sprangletop, Hall's panicum, switchgrass, little bluestem, seacoast bluestem (*Schyzachyrium littorale*), bristlegrass, yellow indiangrass, Texas grass, slender grama, plains lovegrass, Indian blanket (*Gallardia pulchella*), and Mexican hat (*Ratibidia columnaris*).

The accessions of lovegrass tridens (9086199-Starr) and Blackfoot daisy (9090490-Jim Hogg) were evaluated for field performance in 2005 and seed was harvested in of 2005. This seed will be germination tested in 2007.

Two new accessions were received in 2005 for the Rio Grande Plain ecoregion. Throughout the spring and summer of 2005, the seed nursery was expanded to include 391 collections representing 19 species of the Rio Grande Plain ecoregion. The seed nursery included the following species in 2005: four flower trichloris, plains bristlegrass, silver bluestem, Hall's panicum, green sprangletop, Texas grass, pink pappusgrass, prairie acacia, orange zexmenia, seacoast bluestem, sideoats grama, lovegrass tridens, Mexican Hat, Indian blanket, frostweed, Blackfoot daisy, Arizona cottontop, and slender grama. All accessions of brownseed paspalum are still located at Beeville.

In the winter of 2005, fifteen species were seeded in the greenhouse to add to the Rio Grande Ecotype project including: prairie acacia, frostweed, big bluestem, sideoats grama, green sprangletop, Hall's panicum, switchgrass, little bluestem, seacoast bluestem, yellow indiangrass, pink pappusgrass, plains lovegrass, slender grama, and Texas wintergrass (*Nassella leucotricha*). The Blackfoot daisy accession was also replanted, but germination was only 2%.

Three new accessions were received in 2006 for the Rio Grande Plain ecoregion. Throughout the spring and summer of 2006, the seed nursery was expanded to include 349 collections representing 22 species of the Rio Grande Plain ecoregion. The seed nursery included the following species in 2006: four-flower trichloris, Southwestern bristlegrass, silver bluestem, Hall's panicum, green sprangletop, pink pappusgrass, prairie acacia, sideoats grama, lovegrass tridens, Indian blanket, frostweed, Blackfoot daisy, Arizona cottontop, brownseed paspalum, Texas wintergrass, Engelmann's daisy, frostweed, switchgrass, big bluestem, little bluestem, and Indiangrass. The IEP plots of plains bristlegrass and slender grama were discontinued in 2006 due to commercial releases of these species.

In the winter of 2006, seven species were seeded in the greenhouse to add to the Rio Grande Ecotype project. Germination charts for these following species are included under the individual species' project: big bluestem, sideoats grama, little bluestem, Indiangrass, and Indian blanket. Apache plume (*Fallugia paradoxa*) are included here. Accessions with enough plants will be transplanted to field plots in the spring of 2007.

Collection description sheets were written for Maximilian sunflower (*Helianthus maximiliani*), fourwing saltbush (*Artriplex canescens*), and Hall's panicum in 2006. These have been posted on the PMC website and the State Office has requested collections from the Field Offices.

Seventeen new accessions were received in 2007 for the Rio Grande Plain ecoregion. Throughout the spring and summer of 2007, the seed nursery included 189 collections representing 16 species of the Rio Grande Plain ecoregion. The seed nursery included the following species in 2007: four-flower trichloris, silver bluestem, Hall's panicum, green sprangletop, sideoats grama, Indian blanket, frostweed, Blackfoot daisy, Texas wintergrass, Engelmann's daisy, frostweed, switchgrass, big bluestem, little bluestem, Indiangrass, and Apache plume. The IEP plots of Southwestern bristlegrass, pink pappusgrass, and prairie acacia were discontinued in 2007 due to these species being moved into seed increase. The Arizona cottontop plot was discontinued in 2007 due to commercial release of this species. The lovegrass tridens plot has also been discontinued, until more collections are made.

The Apache plume accession was planted in the field in April of 2007. The Apache plume was evaluated for field performance in November 2007 (Table 1). In the winter of 2007, six species were seeded in the greenhouse for the Rio Grande Ecotype project. Germination charts for these following species are included under the individual species' project: big bluestem,

sideoats grama, Indiangrass, Engelmann's daisy, and frostweed. Accessions with enough plants will be transplanted to field plots in the spring of 2008.

Table 1. Study STPMC-P-0137- RA Rio Grande Ecotype Project Initial Field Evaluation 2007

Species	Accession Number	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*
Apache plume	9093349 Jeff Davis	70	new	6.0	7.0	6.0	5.0	n/a

*Ocular estimate (1 = Best)

Study Number: STPMC-P-0138- RA

Study Title: Texas Coastal Prairie Ecotype Project

Introduction: In 2001, an initiative was begun between the USFW Service, CKWRI, the Gulf Coast Association of Soil and Water Conservation Districts, the STN Project, and the Kika de la Garza PMC to produce native, eco-typic plant material to displace invasive species on pastures and agricultural fields, along the Texas Coastal Prairie.

Problem: There is a need for native adapted ecotypic plants for range restoration, wildlife habitat, and xeriscaping along the Texas Gulf Coast.

Objective: The PMC will establish a seed nursery of Texas Coastal Prairie ecotypes for a variety of grasses, forbs, and legumes. The ecotype region was established to be large enough to retain regional integrity and genetic adaptability. The seed nursery will consist of approximately 20 collections of each species. The nursery will consist of transplants that are isolated as necessary to maintain species integrity and diversity. The seed nursery will be hand harvested to ensure a complete spectrum of seed is harvested from each species. The nursery seed will be planted in production fields where it will then be harvested and bulked per species. The ecoregion seed will then be made available to commercial seed growers.

Discussion: Thirteen species were selected for initial collecting and evaluation. This selection included 4 forbs: white prairie clover (*Dalea candida*), black-eyed Susan (*Rudbeckia hirta*), rattlesnake master (*Eryngium yuccifolium*), and Kansas gayfeather (*Liatris pycnostachya*). One cool season grass, Virginia wildrye (*Elymus virginicua*), was included. Eight warm season grasses were also included: yellow Indiangrass (*Sorghastrum nutans*), big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium* var. scoparium), switchgrass (*Panicum virgatum*), Florida paspalum (*Paspalum floridanum*), brownseed paspalum (*Paspalum plicatulum*), eastern gamagrass (*Tripsacom dactyloides*), and sideoats grama (*Bouteloua curtipendula*). Ten to twenty-five collections of each species are being collected from the 30 counties along the Texas Coastal Prairie.

Detailed information for white prairie clover, rattlesnake master, Kansas gayfeather, Virginia wildrye, yellow Indiangrass, big bluestem, little bluestem, switchgrass, Florida paspalum, brownseed paspalum, eastern gamagrass, and sideoats grama can be found in the individual species' project. All information for black-eyed Susan is provided here.

In 2001, 42 collections were received, representing 12 of the 13 selected species. In spring 2002, ten of these species were seeded in the greenhouse. One accession of eastern gamagrass, 2 accessions of Florida paspalum, 2 accessions of little bluestem, 2 accessions of rattlesnake master, and one accession of roundhead prairie clover were transplanted in to the field to start a small seed nursery.

In 2002, 48 additional collections were received representing 11 of the selected species. In December 2002, 22 collections were seeded in the greenhouse. Three accessions of Kansas gayfeather were planted in the field in July 2003. Accessions with good germination were added to the seed nursery.

In 2003, 6 additional collections were received representing 11 of the selected species. In December 2003, 1 new accession of rattlesnake master, 9 yellow Indiangrass, 7 big bluestem, 2

little bluestem, 2 switchgrass, 1 Florida paspalum, and 5 sideoats grama were seeded in the greenhouse. Accessions with good germination were added to the seed nursery.

In 2004, 5 additional collections were received representing four of the selected species. In December 2004, 10 yellow Indiangrass, 5 big bluestem, and 4 little bluestem were seeded in the greenhouse. Germination information for these species can be found in the individual species' project. Those accessions exhibiting good germination were transplanted into the field in 2005.

In 2005, 10 additional collections were received representing 5 of the selected species. In December 2005, 5 new accessions of Kansas gayfeather, 12 yellow Indiangrass, 7 big bluestem, 7 little bluestem, 4 switchgrass, 2 Florida paspalum, 4 brownseed paspalum, 3 sideoats grama, and 2 black-eyed Susan were seeded in the greenhouse. Ten accessions were added to the seed nursery in 2006 to bring the total to 81 accessions. The black-eyed Susan accessions were evaluated for field performance in April and November of 2006. Both accessions performed well. Seed was collected in November of 2006 and will be germination tested in 2007.

In 2006, 8 additional collections were received representing 5 of the selected species. Collection description sheets were written for roundhead prairie clover and white prairie clover in 2006. These have been posted on the PMC website and the State Office has requested collections from the Field Offices. In December 2006, 6 new accessions of Kansas gayfeather, 2 yellow Indiangrass, 1 big bluestem, 1 little bluestem, 2 switchgrass, 2 Florida paspalum, and 1 brownseed paspalum were seeded in the greenhouse. Germination information for these species can be found in the individual species' project. Four accessions were added to the seed nursery in 2007 to bring the total to 85 accessions. The black-eyed Susan plot was evaluated for field performance in October of 2007. All accessions were dry, so seed was collected and the plot was evaluated for emerging seedlings (Table 1).

In 2007, 29 additional collections were received representing 12 of the selected species. In December 2007, 2 new accessions of Kansas gayfeather, 2 yellow Indiangrass, 1 big bluestem, 3 little bluestem, 1 Florida paspalum, 1 Eastern gamagrass, and 1 brownseed paspalum were seeded in the greenhouse. Germination information for these species can be found in the individual species' project. Those accessions exhibiting good germination will be transplanted into the field beginning in the spring of 2008.

Table 1. Study STPMC-P-0138- RA Texas Coastal Prairie Ecotype Project Initial Field Evaluation 2007

Species	Accession Number	Plant Stage	Seed Production*	Seed Shatter*	Seedling Emergence
Black-eyed Susan	9093299 Fort Bend	dry seed	5.0	5.0	a few seedlings
Black-eyed Susan	9090600 Atascosa	dry seed	5.0	5.0	a few seedlings
Black-eyed Susan	9090300 Fort Bend	dry seed	4.0	5.0	a few seedlings
Black-eyed Susan	9090335 Jackson	dry seed	5.0	5.0	many seedlings
Black-eyed Susan	9090336 Calhoun	dry seed	5.0	5.0	many seedlings
Black-eyed Susan	9090338 Harris	dry seed	5.0	5.0	many seedlings

*Ocular estimate (1 = Best)

Study Number: STPMC-P-0139- RA

Study Title: Assembly and Evaluation of Hall's Panicum (*Panicum hallii*)

Introduction: *Panicum hallii* is a warm-season perennial bunchgrass that grows 60-90 cm in height (Gould, 1975). There are two main varieties: *hallii* and *filipes* (USDA, 1994). *Panicum hallii* var. *hallii* (previously known as *Panicum hallii*) can be found from Oklahoma to Colorado to Texas and Arizona and down into Mexico (Hitchcock, 1971). Commonly known as Hall's panicum or panicgrass, it is found mostly in the rocky, dry uplands in the western two-thirds of Texas (Correll and Johnston, 1996), but can also be found on calcareous soils along the Gulf Coast. It is palatable for all livestock, but provides only fair quality forage (Hatch, Schuster, and Drawe, 1999). In addition, it tends to decrease under heavy grazing (Gay, Dwyer, Hatch, and Schickendanz, 1980). *Panicum hallii* var. *filipes* (previously known as *P*. *filipes*) can be found from Louisiana to Texas, and down into northeastern Mexico (Hitchcock, 1971). It is found along roadsides and in disturbed lowlands from North Central Texas south to the Rio Grande Plain, less frequently in West Texas, and in all but the extreme Northern and Western portions of the Panhandle (Gould, 1975). It is commonly called filly panicum (Hignight, Wipiff, and Hatch, 1988), although the common name, Hall's panicgrass, has been used as well (USDA, 1994). The latter name may come from the high degree of introgression found between the two varieties (Correll and Johnston, 1996). *Panicum hallii* var. *filipes* tends to be more productive than *P*. *hallii* var. *hallii*, but produces only fair to poor quality livestock forage. The seeds of both varieties can be eaten by birds (Hatch, Schuster, and Drawe, 1999). The two varieties can be distinguished from one another because *P*. *hallii* var. *filipes* tends to be taller, have longer, more relaxed leaf blades, larger, looser panicles, and smaller spikelets.

Problem: There is a need for native, adapted seed available at a reasonable price for restoration and reclamation of habitat in the South Texas region.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of Hall's panicum. Hall's panicum collections will be evaluated for adaptation in the broad mixed-soil region known as the Rio Grande Plain.

Discussion: Three accessions of Hall's panicum had survived in the Rio Grande Plains ecotype plot by the end of 2004. Seed was collected in June, August, and November 2004 from this plot and was germination tested in March of 2005. One accession (9089159-Cameron) had the best germination for all three harvests and the highest seed production. All accessions continue to exhibit poor over winter survival, poor regrowth, and little or no seed production during the second year in the plot. Four accessions were added to the plot and 2 replanted in May of 2005. These accessions were evaluated for field performance in 2005. Accession 9091840-Zapata had great field performance during its first year. Due to superior field performance in 2003 and harvest germination numbers, an isolated seed increase plot of accession 9089159-Cameron was started from original seed. Three hundred plants were transplanted in May of 2005. Seed was harvested in the fall of 2005.

In December 2005, eleven accessions of Hall's panicum (all accessions that still had original seed left) were seeded in the greenhouse. Three had germination at 74% or higher (9091840-Zapata, 9085421-Nueces, & 9089159-Cameron) and the rest were reseeded in an attempt to get enough seedlings for a field planting at the Annex in a sandier soil. Four accession were planted at the Annex in July of 2006. These accessions were evaluated for field performance in November of 2006. Accession 9089159-Cameron had the most dense growth and overall vigor.

Seed was also harvested and will be germination tested in 2008. It is hoped that over winter survival will improve in a sandier soil.

The accessions in the clay soil were evaluated one last time in November of 2006. None of the original plants had survived, but four accessions had numerous volunteer seedlings (9089159-Cameron, 9090675-Maverick, 9090713-Frio, and 9091840-Zapata). This plot was plowed out in December of 2006.

A collection description sheet was written for Hall's panicum in 2006. It was posted on the PMC website and the State Office has requested collections from the Field Offices.

The plot at the Annex was evaluated again in November of 2007 (Table 1). Only two of the four accessions survived and 9085421-Nueces had the best survival, density and vigor. In November 2007, these two accessions were seeded in the greenhouse for seed increase. Plants will be added to the existing 9089159-Cameron seed increase plot and a new plot of 9085421-Nueces will be planted in the spring of 2008.

Table 1. Study STPMC-P-0139- RA Hall's Panicum

Initial Field Evaluation 2007 – Annex Plot (sandy soil)

Accession Number	Source (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*
9091840	Zapata	0	-	-	-	-	-	-
9085421	Nueces	96	100	4.0	4.0	5.0	5.0	5.0
9091807	Bee	0	-	-	-	-	-	-
9089159	Cameron	48	100	5.0	5.0	5.0	5.0	5.0

*Ocular estimate (1= Best)

Study Number: STPMC-P-0140- RA

Study Title: South Texas Sand Plain Ecotype Project

Introduction: An initiative was developed in August of 2000 and is spearheaded by the Caesar Kleberg Wildlife Research Institute to develop and promote native plants for the restoration and reclamation of habitat on private and public lands in South Texas. The goal of the initiative called the South Texas Natives Project is to provide economically viable sources of plants and seeds, and to develop effective planting strategies for the restoration of South Texas plant communities.

Problem: There is a need for native adapted ecotypic plants for range restoration, wildlife habitat and xeriscaping in South Texas.

Objective: The PMC will establish a seed nursery of South Texas Sand Plain ecotypes of a variety of grasses, forbs, and legumes. The ecotype region was established to be large enough to retain regional integrity and genetic adaptability. The seed nursery will consist of approximately 20 collections of each species. The nursery will consist of transplants that are isolated as necessary to maintain species integrity and diversity. The seed nursery will be hand harvested to ensure a complete spectrum of seed is harvested from each species. The nursery seed will be planted in production fields where it will then be harvested and bulked per species. The ecoregion seed will then be made available to commercial seed growers.

Discussion: In 2001, 24 collections representing five species were collected for the South Texas Sand Plain Ecoregion. In the spring of 2002, eight species were seeded in the greenhouse for the South Texas Sand Plain project including 7 accessions of four-flowered trichloris (*Trichloris pluriflora*), 3 hairy grama (*Bouteloua hirsuta*), 6 switchgrass (*Panicum virgatum*), 10 hooded windmillgrass (*Chloris cucullata*), 4 silver bluestem (*Bothriochloa saccharoides*), 6 brownseed paspalum (*Paspalum plicatulum*), 4 plains bristlegrass (*Seteria* spp.) and 3 Mexican hat (*Ratibida columnifera*).

At the end of 2002, the seed nursery for the South Texas Sand Plain included 3 accessions of Mexican hat, 6 four-flowered trichloris, 4 silver bluestem, and 2 switchgrass. In 2002, 178 additional collections representing 45 species were collected for the South Texas Sand Plain ecoregion. In the winter of 2002, five species were seeded in the greenhouse for the South Texas Sand Plain project including 4 accessions of sideoats grama (*Bouteloua curtipendula*), 8 hooded windmillgrass (*Chloris cucullata*), 5 silver bluestem, 5 brownseed paspalum (*Paspalum plicatulum*), and 3 gayfeather (*Liatris* spp.).

In 2003, 57 additional collections representing 33 species were collected for the South Texas Sand Plain ecoregion. Throughout the spring and summer of 2003, the seed nursery was expanded to include 17 collections representing 6 species of the South Texas Sand Plain ecoregion. In the winter of 2003, 5 accessions of big bluestem (*Andropogon gerardii*), 2 sideoats grama, 3 switchgrass, and 4 yellow Indiangrass (*Sorghastrum nutans*) were germinated in the greenhouse.

In 2004, 66 additional collections representing 30 species were collected for the South Texas Sand Plain ecoregion. Throughout the spring and summer of 2003, the seed nursery was expanded to include 33 collections representing 9 species of the South Texas Sand Plain ecoregion.

In the winter of 2004, 2 accessions of big bluestem, 11 seacoast bluestem (*Schizachyrium littorale*), 13 Texas grass (*Vaseyochloa multinervosa*), 3 yellow Indiangrass, 24 Mexican hat, 24 Indian blanket (*Gallardia puchella*), 6 clammyweed (*Polanisia dodecandra*), and 10 partridge pea (*Chaemaecrista fasciculata*) were germinated in the greenhouse.

In 2005, 2 additional collections representing 2 species were collected for the South Texas Sand Plain ecoregion. Throughout the spring and summer of 2005, the seed nursery was expanded to include 73 collections representing 10 species of the South Texas Sand Plain ecoregion. In the winter of 2005, 1 new accessions of big bluestem, 2 seacoast bluestem, 3 switchgrass, and 5 gayfeather were germinated in the greenhouse. Accessions with good germination were transplanted to field plots in the spring and summer of 2006.

In 2006, 1 additional collection was received for the South Texas Sand Plain ecoregion. In 2006, the seed nursery included 42 collections representing 6 species of the South Texas Sand Plain ecoregion. Mexican hat, Indian blanket, clammyweed, and partridge pea are all annual species and their plots were not replanted for 2006. In the winter of 2006, 1 new accession of Indian blanket, 1 sideoats grama, 5 yellow Indiangrass, and 6 gayfeather were germinated in the greenhouse. Accessions with good germination were transplanted to field plots in the spring and summer of 2007.

In 2007, 1 additional collection was received for the South Texas Sand Plain ecoregion. In 2007, the seed nursery included 29 collections representing 7 species of the South Texas Sand Plain ecoregion. The wild buckwheat (*Erigonum multiflorum*) plot was evaluated for field performance in November of 2007 (Table 1). The species performed well and was taller than expected. Seed was harvested and will be germination tested in 2008. In the winter of 2007, 5 yellow Indiangrass and 2 gayfeathers were germinated in the greenhouse. Germination results for these species are discussed under the individual species' project. Those accessions with good germination will be transplanted to field plots in the spring and summer of 2008. The seed nursery will continue to expand as more collections are received.

Table 1. STPMC-P-0140- RA South Texas Sand Plain Ecotype Project

Initial Field Evaluation 2007 – Wild Buckwheat

Accession Number	Source (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*
9093366	Nueces	100	-	4.0	4.0	4.0	4.0	3.0

*Ocular estimate (1= Best)

Study Number: STPMC-P-0143- RA

Study Title: Assembly and Evaluation of Green Sprangletop (*Leptochloa dubia*)

Introduction: Green sprangletop, *Leptochloa dubia,* is a perennial, warm-season native that grows 1 to 3 feet in height (Gould, 1975). It is widespread and highly palatable, but usually is present in mixed stands with other grasses and is seldom abundant. It is a good grass to include in native grass mixtures when seeding overused ranges. Green sprangletop is found in all areas of Texas except in the Pineywoods and Post Oak Savannah.

Problem: There is a need for native, adapted seed available at a reasonable price for restoration and reclamation of habitat in the South Texas region.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of green sprangletop. Green sprangletop collections will be evaluated for adaptation in the mixed soil region known as the Rio Grande Plain.

Discussion: At the end of 2005 there were eleven accessions of green sprangletop in the Rio Grande Plains Ecotype plot. There seems to be two growth forms of green sprangletop in the plot. There is a shorter, denser form that has better survival, but shows more signs of chlorosis. The other is a taller, less dense form that is greener, but has lower survival. The 2005 seed harvests were germination tested in 2007 (Table 1).

The cultivar Van Horn green sprangletop was planted in a separate plot in July of 2006. Both plots were evaluated for field performance in 2006. All of the accessions had good performance. No new accessions were received in 2006 or 2007, thus no new accessions were seeded in the greenhouse. The State NRCS Office will be requesting Field Offices to send in more collections of this species in 2008. This project will be on hold until a representative sample of collections are obtained. Accessions will be added to the plot as received.

Table 1. Study STPMC-P-0143- RA Green Sprangletop - 2005 Harvest Germination

Accession Number	Origin (County)	Date Harvested	Grams Harvested	3 Days %	7 Days %	28 Days %
9089102	Goliad	5/25/2005	2.0	2.7	12.7	14.7
9052757	Duval	5/25/2005	3.0	4.0	13.3	14.7
9088972	Atascosa	5/25/2005	6.0	5.3	12.0	12.7
9090435	Kinney	5/25/2005	16.0	0.7	3.3	3.3
9090419	Kinney	5/25/2005	21.0	4.7	7.3	8.7
9090411	Kinney	5/25/2005	17.0	6.7	13.3	16.7
9090480	Starr	5/25/2005	18.0	0.0	0.7	2.7
9052752	Val Verde	5/25/2005	21.0	2.7	8.7	10.7
9088630	Dimmit	5/25/2005	<1	0.0	4.0	12.0
9090720	Frio	5/25/2005	3.0	0.0	1.3	1.3
9091858	Zapata	5/25/2005	<1	4.7	13.3	20.7
9089102	Goliad	7/6/2005	25.0	0.0	0.0	0.0
9052757	Duval	7/6/2005	20.0	2.0	2.7	4.0
9088972	Atascosa	7/6/2005	29.0	0.7	1.3	1.3
9090435	Kinney	7/6/2005	18.0	0.7	1.3	2.0
9090419	Kinney	7/6/2005	46.0	0.0	0.0	0.0
9090411	Kinney	7/6/2005	45.0	0.7	0.7	1.3
9090480	Starr	7/6/2005	10.0	0.7	0.7	0.7
9052752	Val Verde	7/6/2005	28.0	1.3	2.7	2.7
9088630	Dimmit	7/6/2005	7.0	0.7	0.7	1.3
9090720	Frio	7/6/2005	3.0	0.0	0.0	0.7
9091858	Zapata	7/6/2005	no seed	-	-	-
9089102	Goliad	9/16/2005	2.0	1.3	2.0	2.0
9052757	Duval	9/16/2005	2.0	1.3	2.0	2.7
9088972	Atascosa	9/16/2005	5.0	0.0	0.0	0.0
9090435	Kinney	9/16/2005	1.0	0.0	0.0	0.0
9090419	Kinney	9/16/2005	2.0	0.0	0.0	0.0
9090411	Kinney	9/16/2005	<1	0.0	0.0	1.3
9090480	Starr	9/16/2005	<1	0.7	0.7	0.7
9052752	Val Verde	9/16/2005	6.0	0.7	0.7	0.7
9088630	Dimmit	9/16/2005	<1	0.0	0.7	0.7
9090720	Frio	9/16/2005	1.0	0.0	0.7	0.7
9091858	Zapata	9/16/2005	no seed	-	-	-

***12 hours dark 20°C (68°F) / 12 hours light 30°C (86°F)

Study Number: STPMC-P-0244- RA

Study Title: Assembly and Evaluation of Silver Bluestem (*Bothriochloa saccharoides*)

Introduction: Silver Bluestem (*Bothriochloa saccharoides*) is a native, perennial bunchgrass with a conspicuous basal cluster of leaves (Gould, 1975). The culms are up to 80 cm tall and unbranched (Hutch, Schuster & Drawe, 1999). Silver bluestem occurs in all areas of the state, usually in dry open places (Correll & Johnston, 1979). It prefers sandy soils but can occur on clay soils if well drained, such as embankments (Gould, 1975). It is one of the most common perennial roadside grasses in northern and western Texas (Gould, 1975). It is relatively frequent on sand and sandy loam sites and other well drained, moderately disturbed soils in the Gulf Coast (Hutch, Schuster & Drawe, 1999). However, it is less common in coastal areas and East Texas than longspike silver bluestem (*Bothriochloa longipaniculata*) (Gould, 1975). Its range extends into Alabama, Missouri, southern Colorado, and south to northern Mexico (Gould, 1975). Silver bluestem flowers from May to November (Gould, 1975), and provides good forage (Hutch, Schuster & Drawe, 1999). It is also known by the common name silver beardgrass.

Problem: There is a need for native, adapted seed available at a reasonable price for restoration and reclamation of habitat in the South Texas region.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of silver bluestem. Silver bluestem collections will be evaluated for adaptation in the sandy soil region known as the South Texas Sand Plain and the broad mixed soil region known as the Rio Grande Plain.

Discussion: At the end of 2005, there were 4 accessions of silver bluestem in the South Texas Sand Plain Ecotype plot at the Annex and 40 accessions in the Rio Grande Plain Ecotype plot in Block E. In 2005, it was determined that these plots contain a mix of four similar looking species: longspike silver bluestem (*Bothriochloa longipaniculata*), silver bluestem (*Bothriochloa laguroides* subsp. torreyana), pinhole bluestem (*Bothriochloa barbinodis* var. perforata), and cane bluestem (*Bothriochloa barbinodis* var. barbinodis). These plots were evaluated for early green-up in April 2006. A silver bluestem from Native American Seed was planted in a separate plot to use for comparison. It was evaluated in November of 2006. No new accessions were seeded in the greenhouse in December 2006. The 2005 seed harvest from this plot was germination tested in 2007 (Table 1). All plots were evaluated again in May 2007 for field performance (Table 2). Several accessions had above average vigor, density and seed production.

Accession 9086217-Kleberg, a longspike silver bluestem, was planted in both Ecoregion plots and exhibited above average performance in 2002 and 2003. An isolated seed increase plot of 280 plants of this accession was started in May 2005. Seed was harvested from this plot in the fall of 2005 and in May of 2007.

In previous years, the seed harvests of silver bluestem have had poor seed fill. To test if this is due to location, plants were sent to Katy and Stephenville, TX in 2007. These plants were harvested in 2007 and the seed will be tested for fill and germination in 2008. Until the seed fill issue has been solved, this project will be on hold for selections.

Table 1. Study STPMC-P-0143- RA Green Sprangletop - 2005 Harvest Germination

Accession Number	Origin (County)	Species	Plot Location	Date Harvested	Grams Harvested	7 Days %	14 Days %	28 Days %
9086151	Jim Wells	longspike	Bk. E	6/21/2005	27.0	4.7	4.7	4.7
9086214	Kenedy	longspike	Bk. E	6/21/2005	25.0	4.7	4.7	4.7
9086215	Atascosa	silver	Bk. E	6/21/2005	32.0	0.7	0.7	1.3
9086216	Kenedy	silver	Bk. E	6/21/2005	54.0	1.3	1.3	1.3
9089094	LaSalle	pinhole	Bk. E	6/21/2005	33.0	2.0	2.7	2.7
9086270	Jim Hogg	cane	Bk. E	6/21/2005	52.0	4.7	4.7	4.7
9086299	Starr	longspike	Bk. E	6/21/2005	28.0	6.0	6.0	6.0
9088678	Goliad	silver	Bk. E	6/21/2005	28.0	4.0	4.7	4.7
9088983	LaSalle	pinhole	Bk. E	6/21/2005	34.0	4.0	4.0	4.0
9088573	Zavala	silver	Bk. E	6/21/2005	59.0	0.0	0.7	1.3
9088656	Wilson	pinhole	Bk. E	6/21/2005	47.0	4.0	4.0	4.0
9088570	Zavala	silver	Bk. E	6/21/2005	21.0	6.0	6.0	6.0
9089003	Uvalde	silver	Bk. E	6/21/2005	38.0	10.0	10.7	10.7
9088741	Jim Hogg	cane	Bk. E	6/21/2005	44.0	2.0	2.0	2.0
9088830	Jim Wells	cane	Bk. E	6/21/2005	48.0	0.7	0.7	0.7
9088833	Jim Wells	cane	Bk. E	6/21/2005	60.0	3.3	4.0	4.0
9088931	Dimmit	cane	Bk. E	6/21/2005	33.0	1.3	1.3	1.3
9088906	Dimmit	pinhole	Bk. E	6/21/2005	17.0	2.0	2.7	2.7
9086310	Duval	silver	Bk. E	6/21/2005	35.0	9.3	10.7	12.0
9088592	Bee	longspike	Bk. E	6/21/2005	52.0	9.3	10.0	10.7
9088613	Frio	pinhole	Bk. E	6/21/2005	36.0	9.3	10.7	11.3
9088764	Duval	cane	Bk. E	6/21/2005	76.0	3.3	4.0	4.0
9088585	Bee	longspike	Bk. E	6/21/2005	31.0	1.3	1.3	2.0
9088669	Goliad	silver	Bk. E	6/21/2005	37.0	3.3	3.3	3.3
9086274	Atascosa	longspike	Bk. E	6/21/2005	20.0	4.7	4.7	4.7
9089186	Medina	silver	Bk. E	6/21/2005	66.0	6.0	6.7	6.7
9088973	Frio	pinhole	Bk. E	6/21/2005	56.0	6.7	7.3	8.0
9088945	Atascosa	cane	Bk. E	6/21/2005	23.0	2.0	2.0	2.0
9088801	Webb	cane	Bk. E	6/21/2005	51.0	9.3	9.3	9.3
9088724	Webb	pinhole	Bk. E	6/21/2005	31.0	6.7	6.7	7.3
9045834	Webb	silver	Bk. E	6/21/2005	38.0	5.3	5.3	5.3
9093177	Bexar	longspike	Bk. E	6/21/2005	no seed	-	-	-
9090730	Wilson	pinhole	Bk. E	6/21/2005	no seed	-	-	-
9090613	Maverick	pinhole	Bk. E	6/21/2005	no seed	-	-	-
9090665	Maverick	cane	Bk. E	6/21/2005	no seed	-	-	-
9090644	Kinney	silver	Bk. E	6/21/2005	no seed	-	-	-
9089204	Uvalde	pinhole	Bk. E	6/21/2005	no seed	-	-	-
9090698	Bexar	silver	Bk. E	6/21/2005	no seed	-	-	-
9088660	Karnes	silver	Bk. E	6/21/2005	no seed	-	-	-
9090309	Cameron	longspike	Bk. E	6/21/2005	no seed	-	-	-
9086151	Jim Wells	longspike	Annex	6/17/2005	20.0	0.7	0.7	0.7
9086214	Kenedy	longspike	Annex	6/17/2005	31.0	2.0	2.7	2.7
9086216	Kenedy	silver	Annex	6/17/2005	37.0	0.7	1.3	1.3
9086217	Kleberg	longspike	Annex	6/17/2005	36.0	2.7	2.7	2.7

***12 hours dark 20°C (68°F) / 12 hours light 30°C (86°F)

Table 2. Study STPMC-P-0244- RA Silver Bluestem - Initial Field Evaluation May 2007

PMC (clay soil)

Accession Number	Source (County)	Species	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*
9086151	Jim Wells	longspike	100	50	4.0	3.0	5.0	5.0	4.0
9086214	Kenedy	longspike	94	25	5.0	4.0	5.0	5.0	6.0
9086215	Atascosa	silver	100	25	5.0	5.0	5.0	5.0	5.0
9086216	Kenedy	silver	92	25	6.0	6.0	6.0	7.0	5.0
9089094	LaSalle	pinhole	96	25	5.0	5.0	5.0	5.0	5.0
9086270	Jim Hogg	cane	98	25	5.0	6.0	5.0	5.0	5.0
9086299	Starr	longspike	100	50	3.0	3.0	5.0	5.0	3.0
9088678	Goliad	silver	92	50	3.0	3.0	5.0	5.0	3.0
9088983	LaSalle	pinhole	94	25	5.0	5.0	5.0	5.0	5.0
9088573	Zavala	silver	96	40	4.0	4.0	5.0	5.0	4.0
9088656	Wilson	pinhole	94	40	5.0	4.0	5.0	7.0	4.0
9088570	Zavala	silver	94	25	5.0	6.0	5.0	5.0	5.0
9089003	Uvalde	silver	84	30	6.0	4.0	5.0	5.0	5.0
9088741	Jim Hogg	cane	66	20	7.0	7.0	7.0	5.0	7.0
9088830	Jim Wells	cane	80	20	7.0	7.0	7.0	5.0	7.0
9088833	Jim Wells	cane	86	25	6.0	6.0	5.0	6.0	5.0
9088931	Dimmit	cane	100	25	5.0	5.0	5.0	5.0	5.0
9088906	Dimmit	pinhole	100	25	5.0	6.0	5.0	5.0	5.0
9086310	Duval	silver	94	40	4.0	4.0	5.0	5.0	4.0
9088592	Bee	longspike	96	50	3.0	4.0	5.0	5.0	4.0
9088613	Frio	pinhole	70	40	4.0	4.0	5.0	7.0	4.0
9088764	Duval	cane	88	30	5.0	5.0	5.0	7.0	5.0
9088585	Bee	longspike	100	50	3.0	3.0	5.0	6.0	3.0
9088669	Goliad	silver	100	50	3.0	3.0	5.0	5.0	4.0
9086274	Atascosa	longspike	100	25	5.0	5.0	5.0	5.0	5.0
9089186	Medina	silver	96	50	3.0	3.0	5.0	5.0	3.0
9088973	Frio	pinhole	82	10	7.0	7.0	7.0	5.0	6.0
9088945	Atascosa	cane	98	25	5.0	5.0	6.0	5.0	5.0
9088801	Webb	cane	90	25	6.0	5.0	5.0	5.0	5.0
9088724	Webb	pinhole	98	25	5.0	5.0	5.0	5.0	5.0
9045834	Webb	silver	54	50	3.0	2.0	5.0	5.0	3.0
9093177	Bexar	longspike	100	50	4.0	4.0	5.0	5.0	4.0
9090730	Wilson	pinhole	98	40	4.0	5.0	5.0	5.0	4.0
9090613	Maverick	pinhole	100	40	5.0	6.0	5.0	5.0	5.0
9090665	Maverick	cane	98	40	4.0	6.0	5.0	5.0	4.0
9090644	Kinney	silver	88	40	5.0	4.0	5.0	5.0	4.0
9089204	Uvalde	pinhole	90	40	5.0	5.0	5.0	5.0	5.0
9090698	Bexar	silver	100	30	4.0	5.0	5.0	5.0	4.0
9088660	Karnes	silver	44	30	5.0	4.0	5.0	6.0	5.0
9090309	Cameron	longspike	80	50	3.0	4.0	5.0	5.0	3.0

*Ocular estimate (1= Best)

Table 2. Study STPMC-P-0244- RA Silver Bluestem - Initial Field Evaluation (continued)

Annex (sandy soil)

Accession Number	Source (County)	Species	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*
9086151	Jim Wells	longspike	92	75	4.0	4.0	5.0	5.0	4.0
9086214	Kenedy	longspike	98	75	4.0	5.0	5.0	5.0	4.0
9086216	Kenedy	silver	60	50	5.0	5.0	6.0	6.0	5.0
9086217	Kleberg	longspike	94	75	4.0	4.0	5.0	5.0	4.0

PMC (clay soil)

Accession Number	Source (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*
n/a	Native American Seed	100	30	3.0	4.0	5.0	5.0	4.0

*Ocular estimate (1= Best)

Study Number: STPMC-P-0346- RA

Study Title: Assembly and Evaluation of Frostweed (*Verbesina microptera*)

Introduction: Frostweed (*Verbesina microptera*), also known as capitana and crownbeard, is a common, native, cool-season, perennial forb. An attractive member of the sunflower family (Asteraceae), it grows approximately 1.2 m tall blooming from September to November (Jones, 1982). Its bright white flowers, which attract numerous butterflies, and hardiness in dry conditions make it an attractive plant for landscape use. In the field, it is often browsed by deer and cattle (Everitt, Drawe, and Lonard, 1999). It is abundant on loamy soil in parts of Texas and north eastern Mexico. In Texas, it is found along the southern portion of the Edwards Plateau, the Rio Grande Plain, and less frequently in the southern portions of the east and south east regions of Texas (Correll and Johnston, 1996).

Problem: There is a need for perennial forbs for range restoration, wildlife habitat and xeriscaping in South Texas.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of frostweed. Frostweed collections will be evaluated for adaptation in the broad mixed soil region known as the Rio Grande Plain.

Discussion: At the end of 2005 there were five accessions in a Rio Grande Plain ecotype plot. Seed was collected in November 2005 and will be germination tested in 2008. No new accessions were added in 2006. This plot was evaluated for field performance in April and November of 2006. All accessions performed well in the field and produced seed, however the plants were only about half as large as the pervious year. This may have been a result of dry conditions. There were numerous volunteer seedlings in the surrounding plots. Seed was collected in November 2006 and will be germination tested in 2008.

Six new accessions were received in 2006 and they were seeded in the greenhouse in December of 2007 (Table 1). These will be added to the field plot in the spring of 2008. The State NRCS Office will be requesting Field Offices to send in more collections of this species in 2008. This project is on hold until collections are made from more counties.

Table 1. Study STPMC-P-0346- RA Frostweed

PMC Greenhouse Germination Winter 2007

Accession Number	Origin (County)	15 Days %	30 Days %	45 Days %
9093381	Frio	13.8	43.4	thinned
9093382	Duval	48.2	52.7	thinned
9093383	Zavala	28.3	38.2	thinned
9093410	Victoria	2.5	20.3	34.0
9093415	Nueces	2.5	3.5	4.3
9093416	Nueces	7.8	27.5	29.3

Study Number: STPMC-P-0347- RA

Study Title: Assembly and Evaluation of Sideoats Grama (*Bouteloua curtipendula*)

Introduction: Sideoats grama is a native, perennial grass with flat, linear leaf blades (Gould, 1975). The inflorescence is usually 30-80 short (1-4 cm long) branches bearing 1-12 sessile spikelets (Gould, 1975). This tufted grass is an important forage species (Correll & Johnston, 1979), but has poor wildlife value (Hutch, Schuster & Drawe, 1999). This species contains two varieties separated by the presence (*Bouteloua curtipendula* var. curtipendula) or absence (*Bouteloua curtipendula* var. caespitosa) of creeping rhizomes (Gould, 1975).

Bouteloua curtipendula var. curtipendula occurs throughout Texas in open grasslands, woods borders, right-of-ways, and non-disturbed sites with better soils (Gould, 1975). Its range extends from Southeastern Canada to the plains region of Central United States to Colorado, southern Utah, New Mexico, Arizona, and south to northern Mexico (Gould, 1975). The range of *Bouteloua curtipendula* var. caespitosa includes the Cross Timbers and Prairies, Edwards Plateau, South Texas Plains, and Trans Pecos regions of Texas and is most common in western Texas (Gould, 1975). Its range includes Oklahoma, southern Colorado, Utah, New Mexico, Arizona, and southern California through the highlands of northern and central Mexico to Oaxaca, and in Venezuela, Bolivia, Uruguay, Argentina, and Peru (Gould, 1975). Sideoats grama flowers mostly from June to November (Gould, 1975).

Problem: There is a need for native, adapted seed available at a reasonable price for restoration and reclamation of habitat in the South Texas region.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of sideoats grama. Sideoats grama collections will be evaluated for adaptation in three South Texas Ecoregions: the sandy soil region known as the South Texas Sand Plain, a region along the Texas coast known as the Texas Coastal Prairie, and the broad mixed-soil region known as the Rio Grande Plain.

Discussion: At the end of 2005, there were 29 accessions in the Rio Grande Ecotype plot, 1 accession at the Annex in the South Texas Sand Plain Ecotype plot, and 2 commercial varieties in a separate plot for comparison. To date, none of the collections from coastal counties have had enough germination to transplant into the field.

Seed harvested in 2005 from the evaluation plots was germination tested in September of 2006. The May harvest had much higher germination numbers than the June, September or October harvests. Spikelets, not bare seeds, were used for the tests, so it is possible that low germination numbers may also be due to low seed fill. Two accessions stood out as having higher germination across several dates (9089065-Uvalde County and 9088518-Duval County).

One accession was added to the Rio Grande Ecotype plot and three cultivars were added to the observation plot in July 2006. All three plots were evaluated in April of 2006. No seed was harvested from these plots in 2006 or 2007. One new accession was seeded in the greenhouse in November of 2007 and had 5% germination in 60 days. This accession will be added to the Rio Grande Plain plot in the spring of 2008.

In previous years, the seed harvests of sideoats grama have had poor seed fill. To test if this is due to location, plants were sent to Katy and Stephenville, TX in 2008. These plants did not

produce a harvest in 2007. These plots will be harvested in 2008 and the seed will be tested for fill in 2009. Until the seed fill issue has been solved, this project will be on hold for selections.

***Offsite Evaluations*:** STN has also had 18 accessions at an offsite evaluation plot at Rio Farms and 21 accessions and one cultivar at Rancho Blanco under evaluation since 2004. They sent 4 accessions to the Noble Foundation for evaluation in 2006. The plants at the Noble Foundation had an average survival rate of 82% in 2007.

Study Number: STPMC-P-0348- RA

Study Title: Assembly and Evaluation of Engelmann's Daisy (*Engelmannia peristenia*)

Introduction: Engelmann's daisy (*Engelmannia peristenia)*, also known as cutleaf daisy, was previously known under the name *Engelmannia pinnatifida*. This perennial species grows up to 75 cm. tall (Jones, 1982). It is a showy member of the Asteraceae family, with loosely clustered yellow heads from February to November (Jones, 1982). Cattle readily eat Engelmann's daisy, and it has been grazed-out from much of its original range (Ajilvsgi, 1984). White-tailed deer also eat the leaves and several species of birds eat the seeds (Everitt, Drawe, and Lonard, 1999). It frequently occurs on the better-drained sands or caliche in prairies, openings, and waste places (Jones, 1982). It is most common in north central Texas and the Edwards Plateau, but occurs throughout the state, except in the forested sandy areas of East Texas (Correll and Johnston, 1996). Its range extends into Nebraska, Colorado, Kansas, Oklahoma, New Mexico, and Mexico (Correll and Johnston, 1996).

Problem: There is a need for native, adapted seed available at a reasonable price for restoration and reclamation of habitat in the South Texas region.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of Engelmann's daisy. Engelmann's daisy collections will be evaluated for adaptation in the mixed soil region known as the Rio Grande Plain.

Discussion: There were nine accessions in the Rio Grande Plains Ecoregion plot at the end of 2006. The plot was evaluated for field performance in April of 2006 just before the seed was ripe and again in November of 2006 while the plants were dormant. One accession, 9088649-Karnes Co. had above average performance in both evaluations. One new accession (9093387-Kleberg) was seeded in the greenhouse in December of 2007. It had 43% germination at 30 days and had to be thinned. It will be added to the evaluation plot in the spring of 2008. This project will be put on hold until collections are made from more counties.

Study Number: STPMC-P-0349- RA

Study Title: Assembly and Evaluation of Awnless Bush-sunflower (*Simsia calva*)

Introduction: Awnless bush-sunflower (*Simsia calva*) is a perennial, herbaceous (woody below) member of the Asteraceae family (Correll and Johnston, 1996). It is abundant through Southeast Texas, the Rio Grande Plain, Trans-Pecos, North Central Texas, the Edwards Plateau, and the Plains Country, with its range extending into Mexico (Correll and Johnston, 1996). It grows to 75 cm. tall (Jones, 1982), and has harshly pubescent leaves (Correll and Johnston, 1996). Yellow flowers bloom in solitary heads from February to December (Jones, 1982). Disk flowers are perfect, but the ray flowers are infertile (Correll and Johnston, 1996). White-tailed deer eat the leaves of this species (Everitt, Drawe, and Lonard, 1999).

Problem: There is a need for native, adapted seed available at a reasonable price for restoration and reclamation of habitat in the South Texas region.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of awnless bush-sunflower. Awnless bush-sunflower collections will be evaluated for adaptation in the mixed soil region known as the Rio Grande Plain.

Discussion: There were 19 accessions still alive in the Rio Grande Plains ecoregion plot in 2006. These were evaluated for field performance in April 2006 (Table 1). The evaluation plot of this species was taken out at the end of 2006 due to poor survival on the clay soils. This species seems to have poor resistance and vigor after the fall rains, when the “heavy” clay soils of the PMC exhibited slow water infiltration and poor root oxygenation. Seed that was collected in 2005 will be germination tested in 2007. Then field evaluations and germination results will be compared and selections will be made for an ecotype release.

STN also has awnless-bush sunflower under offsite evaluation, with five accessions at Rio Farms and six accessions at TAES Uvalde since 2005.

In 2006, awnless-bush sunflower plants were sent along with other species to several locations for evaluation for horticultural use. Plants were sent by South Texas Natives (STN) to the San Antonio Botanic Gardens, the Corpus Christi Botanic Gardens, the World Birding Center at Bentsen State Park, TAES Uvalde, and TAES Dallas. The plants sent to Bentsen State Park were still alive, and were said to be attractive when blooming, but not after blooming ceased.

In December of 2007, STN chose 7 accessions for increase and release: 9088546-Frio, 9088713-Webb, 9089117-Medina, 9086285-Jim Wells, 9088578-Bee, 9089015-La Salle, and 9089208-Uvalde. These accessions will be increased by STN in 2008 and a release will be pursued in 2009.

The Study Number: STPMC-P-0350- RA

Study Title: Assembly and Evaluation of Big Bluestem (*Andropogon gerardii*)

Introduction: Big bluestem (*Andropogon gerardii*) is a native, perennial grass that forms dense clumps (Gould, 1975). It grows 0.8-2 meters tall, and may or may not form rhizomes (Gould, 1975). The inflorescence blooms mainly from August to November and consists of 2-7 spike-like branches bearing sessile spikelets (Gould, 1975). This species has three varieties, but only one (*Andropogon gerardii* var. *gerardii*) occurs in the South Texas region (Gould, 1975). This variety is found associated with other tall grasses in prairies and wooded areas having sandy or loamy soils throughout the State (Gould, 1975). This variety's range extends from Southern Canada, through the United States from Montana, Colorado, and Arizona, into Mexico where it is infrequent in the northern and central highlands (Gould, 1975).

Big bluestem is one of the four most important forage grasses in the tallgrass prairies region (Gould, 1975). The other three important, widespread grasses are switchgrass, indiangrass, and little bluestem (Gould, 1975). Big bluestem was once a climax dominant in the Gulf Coast, but it decreases with livestock grazing (Hutch, Schuster & Drawe, 1999). It has good quality for livestock, and fair value to wildlife (Hutch, Schuster & Drawe, 1999).

Problem: There is a need for native, adapted seed available at a reasonable price for restoration and reclamation of habitat in the South Texas region.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of big bluestem. Big bluestem collections will be evaluated for adaptation in three South Texas Ecoregions: the sandy soil region known as the South Texas Sand Plain, the region along the Texas coast known as the Texas Coastal Prairie, and the broad mixed-soil region known as the Rio Grande Plain.

Discussion: At the end of 2005 there were 17 accessions in the Texas Coastal Prairie plot, 7 in the Rio Grande Plain plot, and 12 in the South Texas Sand Plain plot. Due to very dry conditions the plants had poor performance and did not produce seed in 2005.

These plots were evaluated for field performance in April 2006. In September 2006, 3 accessions were added to the Texas Coastal Prairie ecoregion plot. This brought the number of accession in that plot to 20. One accession was also added to the South Texas Sand Plain plot, bringing the number of accessions in that plot to 13. Three cultivars were also planted by STN for observation at the Wildlife Complex. The Texas Coastal Prairie plot was also evaluated again in November as it was the only plot to produce significant seed. The seed that was harvested will be germination tested in 2008.

In December 2006, three new accessions (1 for the Texas Coastal Prairie plot and 1 for a Rio Grande Plain plot) and four replant accessions were seeded in the greenhouse. None of the new accessions had enough plants to be transplanted into the plots. The State NRCS Office will be requesting Field Offices to send in more collections of this species in 2007.

All four plots were evaluated for field performance in November 2007 (Table 1-4). None of the accessions stood out in the Rio Grande Plains plot. In the the South Texas Sand Plain plot, accession 9089228-Kenedy had the best performance, followed by 9090752-Kleberg and 9093239-Kenedy. In the Texas Coastal Prairie plot, accession 9090754-Nueces had the best performance, followed by 9090752-Kleberg. All of the cultivars had lower performance than the

local ecotypes. Seed was harvested from all plots and will be germination tested in 2008. In December 2007, one new accession (Texas Coastal Prairie plot) and three replant accessions were seeded in the greenhouse. The new accession had only 0.7% germination and not enough plants to be transplanted into the plots. The cultivar plot was removed at the end of 2007 to make room for plantings by STN.

In previous years, the seed harvests of big bluestem from the PMC plots have had poor seed fill. To test if this is due to location, plants were sent to Katy and Stephenville, TX in 2007. These plants will be harvested and the seed will be tested for fill in 2008. Until the seed fill issue has been solved, this project will be on hold for selections.

Offsite Evaluations: South Texas Natives (STN) has 35 accessions and one cultivar "Earl" under evaluation at Rio Farms.

In 2006, big bluestem plants of accessions 9086165 and 9086160 were sent along with other species to several locations for evaluation for horticultural use. Plants were sent by South Texas Natives (STN) to the San Antonio Botanic Gardens, the Corpus Christi Botanic Gardens, the World Birding Center at Bentsen State Park, TAES Uvalde, and TAES Dallas.

At Bentsen State Park the plants were considered to be only fair to poor performers. The plants sent to TAES Dallas were judged to not perform as well as the commercial line they also had in the garden.

Table 1. Study STPMC-P-0350- RA Big Bluestem Initial Field Evaluation November 2007

Rio Grande Plains Ecotype – PMC Block G (clay soil)

Accession Number	Source (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*
9086226	Goliad	98	100	5.0	5.0	5.0	5.0	5.0
9090265	Goliad	96	100	5.0	5.0	5.0	5.0	5.0
9086169	Kenedy	94	100	6.0	6.0	5.0	5.0	5.0
9086164	Kenedy	96	100	7.0	7.0	6.0	5.0	5.0
9089235	Brooks	93	100	6.0	5.0	6.0	5.0	5.0
9089228	Kenedy	94	100	5.0	5.0	5.0	5.0	5.0
9086165	Kenedy	57	100	6.0	6.0	5.0	5.0	5.0
9093238	Goliad	97	new	6.0	6.0	5.0	5.0	5.0

*Ocular estimate (1= Best)

Table 2. Study STPMC-P-0350- RA Big Bluestem Initial Field Evaluation November 2007

South Texas Sand Plain Ecotype - ANNEX (sandy soil)

Accession Number	Source (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*
9086164	Kenedy	48	90	7.0	7.0	7.0	5.0	5.0
9086169	Kenedy	70	90	7.0	6.0	7.0	5.0	5.0
9090276	Kleberg	82	90	7.0	6.0	7.0	5.0	5.0
9090263	Kleberg	68	90	7.0	7.0	7.0	5.0	6.0
9089228	Kenedy	80	90	5.0	5.0	5.0	5.0	5.0
9090752	Kleberg	92	90	5.0	5.0	5.0	5.0	4.0
9093239	Kenedy	98	90	5.0	5.0	5.0	5.0	5.0
9093240	Kenedy	95	50	7.0	7.0	7.0	5.0	5.0
9093242	Kenedy	53	50	8.0	7.0	7.0	5.0	7.0
9093237	Kenedy	80	75	7.0	6.0	6.0	5.0	5.0
9093243	Brooks	96	50	7.0	7.0	6.0	5.0	6.0
9093244	Kenedy	89	75	7.0	6.0	6.0	5.0	5.0
9090757	Kleberg	98	75	6.0	6.0	5.0	5.0	7.0

*Ocular estimate (1= Best)

Table 3. Study STPMC-P-0350- RA Big Bluestem Initial Field Evaluation November 2007

Texas Coastal Prairie Ecotype – PMC Block B (clay soil)

Accession Number	Source (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*
9086160	San Patricio	100	100	5.0	5.0	5.0	5.0	5.0
9086167	San Patricio	100	100	5.0	5.0	5.0	5.0	4.0
9086168	San Patricio	100	100	5.0	5.0	5.0	5.0	5.0
9088691	Aransas	100	100	6.0	5.0	5.0	5.0	5.0
9086226	Goliad	0	-	-	-	-	-	-
9086170	San Patricio	100	100	5.0	5.0	5.0	5.0	5.0
9086223	Galveston	96	100	5.0	5.0	5.0	5.0	4.0
408928	Victoria	53	100	5.0	5.0	5.0	5.0	5.0
9090269	Victoria	70	100	5.0	5.0	5.0	5.0	5.0
9090333	Refugio	98	100	5.0	5.0	5.0	5.0	5.0
9090263	Kleberg	100	100	6.0	6.0	5.0	5.0	5.0
9090276	Kleberg	100	100	5.0	5.0	5.0	5.0	5.0
9090754	Nueces	92	100	4.0	4.0	5.0	5.0	5.0
9090759	Nueces	64	100	7.0	7.0	7.0	5.0	7.0
9090752	Kleberg	96	100	4.0	4.0	5.0	5.0	5.0
9090341	Victoria	27	100	7.0	7.0	7.0	5.0	5.0
9090757	Kleberg	100	75	5.0	6.0	5.0	5.0	5.0
9090330	San Patricio	100	50	6.0	6.0	5.0	5.0	5.0
9090267	Victoria	84	25	7.0	6.0	6.0	5.0	5.0
9089132	San Patricio	26	25	7.0	6.0	5.0	5.0	5.0

*Ocular estimate (1= Best)

Table 4. Study STPMC-P-0350- RA Big Bluestem Initial Field Evaluation November 2007

Cultivar Plot – Wildlife Complex (sandy soil)

Accession Number	Source (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*
Earl	commercial	84	75	8.0	8.0	8.0	5.0	7.0
Kaw	commercial	100	100	6.0	7.0	6.0	5.0	6.0
Rountree	commercial	94	80	8.0	7.0	8.0	5.0	7.0

*Ocular estimate (1= Best)

Study Number: STPMC-P-0351- RA

Study Title: Assembly and Evaluation of Prairie Clover (*Dalea spp.*)

Introduction: White prairie clover is a perennial member of the Legume family (Correll and Johnston, 1996). Stems three to ten dm. long grow out from a woody base and its white flowered spikes bloom from May to September (Correll and Johnston, 1996). This species occurs in East, South East, and North Central Texas, and rarely occurs in Western Texas (Correll and Johnston, 1996).

Problem: There is a need for perennial native legumes for range restoration, wildlife habitat, and xeriscaping in South Texas.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of white prairie clover. White prairie clover collections will be evaluated for adaptation in the region along the Texas coast known as the Texas Coastal Prairie.

Discussion: At the end of 2005 there was one accession each of white prairie clover (9088887-Brazoria) and roundhead prairie clover, *Dalea multiflora*, (9086123-Austin) in an evaluation plot. Seed was harvested from both accessions in 2005. In addition, a seed increase row of accession 9086123-Austin was planted in June of 2004. Seed was harvested from this row in December of 2005. The seed harvests were germination tested in 2007 (Table 1). Five seconds of scarification appeared to damage the roundhead prairie clover seed, and one-second scarification had better germination results.

Both accessions were evaluated for field performance in April and September of 2006. Plants were observed to be dormant in November. A late seed harvest was collected from both accessions in September and from the seed increase row in August of 2006. These harvests will be germination tested in 2008. New collections received had little to no seed fill and none had enough seedlings to add to the plot in 2006.

Plants from commercially available seed (Native American Seed) of each species was planted in an isolated plot in June of 2006. The State NRCS Office requested Field Offices to send in more collections of these two species in 2006. This project will be on hold until collections are made from more counties.

Table 1. Study STPMC-P-0351- RA – Prairie Clover PMC Harvest Germination

Species	Harvest Date	Amount Harvested	Scarification	3 Days %	7 Days %	28 Days %
White	7-7-05	96 grams	0	14.7	46.7	47.3
			5 sec	62.0	68.0	68.0
White	7-28-05	221 grams	0	8.0	26.0	29.3
			5 sec	82.0	86.0	86.0
Roundhead	7-7-05	42 grams	0	30.0	53.3	53.3
			5 sec	84.0	90.7	91.3
Roundhead	7-28-05	3 grams	0	20.0	43.3	52.7
			5 sec	62.0	75.3	76.7
Roundhead	12-13-05	104 grams	0	8.0	37.3	45.0
			1 sec	57.3	64.3	64.5
			5 sec	40.0	43.3	43.3

***12 hours dark 16°C (60°F) / 12 hours light 30°C (86°F)

Study Number: STPMC-P-0352- RA

Study Title: Assembly and Evaluation of Florida Paspalum (*Paspalum floridanum*)

Introduction: Florida paspalum (*Paspalum floridanum*) is a native, perennial bunchgrass that grows in grassy areas and open woodlands (Gould, 1975). It grows 2-4 meters tall and forms thick rhizomes (Gould, 1975). Its inflorescence consists of 2-5 branches, each with 4 rows of spikelets on a branched rachis, and blooms mainly from August to November (Gould, 1975). This species has two varieties *Paspalum floridanum* var. *floridanum* (hirsute leaves) and *Paspalum floridanum* var. *glabratum* (glabrous leaves) separated by the presence or absence of coarse hairs on the leaves (Gould, 1975). Both species occur in the Pineywoods, Gulf Prairies and Marshes, and Post Oak Savannah regions of Texas, but var. *glabratum* also occurs in the Blackland Prairies and Cross Timbers and Prairies regions. The range of this species extends from Maryland and Florida, west to Illinois, and in eastern Kansas and eastern Texas (Gould, 1975). Florida paspalum usually occurs on clay or sandy loam soils (Correll & Johnston, 1979). In the eastern portion of the range var. *floridanum* is more common, and in the western portion of the range var. *glabratum* is more common (Gould, 1975). Florida paspalum provides fair to good quality forage for livestock and is a good producer of seed for wildlife (Hutch, Schuster & Drawe, 1999).

Problem: There is a need for native, adapted seed available at a reasonable price for restoration and reclamation of habitat in the South Texas region.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of Florida paspalum. Florida paspalum collections will be evaluated for adaptation in the region along the Texas coast known as the Texas Coastal Prairie.

Discussion: There were five accessions of Florida paspalum in a Texas Coastal Prairie ecoregion plot at the end of 2005. Seed was harvested in August of 2005 and was germination tested in 2007 (Table 1). Two accessions were added in April of 2006, bringing the total number of accessions to seven. The plot was evaluated for field performance in April and November of 2006. The plot was not harvested in 2006 since little seed was produced.

Two replant and two new accessions were seeded in the greenhouse in December of 2006. Neither of the new accessions had sufficient germination to be added to the field plot.

Due to good field performance and lack of original seed, rootstock of accession 9088889 was dug out of the plot and used to start a seed increase row in 2005. A significant seed harvest was not produced in 2005, 2006, or 2007.

One new accession of Florida paspalum was seeded in the greenhouse in November of 2007. It only had 10% germination of 87 seeds, which resulted in too few plants to plant in the field plot.

In previous years, the seed harvests of Florida paspalum has had poor seed fill. To test if this is due to location, plants were sent to Katy, TX in 2007. These plants were harvested in 2007 and the seed will be tested for germination and fill in 2008. Until the seed fill issue has been solved, this project will be on hold for selections.

Table 1. Study STPMC-P-0352- RA Florida Paspalum - 2005 Harvest Germination

Accession Number	Origin (County)	Date Harvested	Grams Harvested	3 Days %	7 Days %	28 Days %
9086204	Harris	8/9/2005	16	0.0	2.7	3.3
9086122	Austin	8/9/2005	13	0.0	0.0	0.7
9089165	Montgomery	8/9/2005	3	0.0	4.0	7.3
9088889	Brazoria	8/9/2005	<1	0.0	10.0	16.0

***12 hours dark 20°C (68°F) / 12 hours light 30°C (86°F)

Study Number: STPMC-P-0353- RA

Study Title: Assembly and Evaluation of Yellow Indiangrass (*Sorghastrum nutans*)

Introduction: Yellow indiangrass (*Sorghastrum nutans*) is a rhizomatous, native perennial grass (Hutch, Schuster & Drawe, 1999). It grows 0.8 to 2.3 meters tall, and forms short, stout rhizomes (Gould, 1975). Its inflorescence is a loosely contracted panicle covered with 6-8 mm long spikelets (Gould, 1975). It blooms mostly from September to November (Gould, 1975) and is one of the most attractive fall blooming grasses in Texas (Correll & Johnston, 1979). It grows in all regions of the State, but is most common in the tall-grass prairie regions of central and coastal Texas (Gould, 1975). Its range extends from south-central Canada, throughout the U.S. east of the Rocky Mountains, and into Northern Mexico (Gould, 1975).

Yellow indiangrass is one of the four important forage grasses in the tallgrass prairies regions (Gould, 1975). The other three important grasses are switchgrass, big bluestem, and little bluestem (Gould, 1975). The presence of these four species indicates a range in good condition (Gould, 1975). Yellow indiangrass provides good quality forage for livestock and good cover for wildlife (Hutch, Schuster & Drawe, 1999).

Problem: There is a need for native, adapted seed available at a reasonable price for restoration and reclamation of habitat in the South Texas region.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of yellow Indiangrass. Yellow Indiangrass collections will be evaluated for adaptation in three South Texas Ecoregions: the sandy soil region known as the South Texas Sand Plain, the region along the Texas coast known as the Texas Coastal Prairie, and the broad mixed-soil region known as the Rio Grande Plain.

Discussion: At the end of 2005, there were 7 accessions of yellow Indiangrass planted in the Texas Coastal Prairie ecoregion plot, 8 accessions in a Rio Grange Plain ecoregion plot, and 2 in a South Texas Sand Plain ecoregion plot.

In April 2006, two new accessions were added to the Texas Coastal Prairie ecoregion plot. All three ecoregion plots were evaluated for field performance in 2006. Overall, all plots had less regrowth and/ or density than in previous years due to dry conditions. Seed was harvested from the Rio Grande Plain and Texas Coastal Prairie plots in 2006, and will be germination tested in 2008. STN planted a cultivar (Lometa) for observation at the Wildlife Complex in 2006.

In December 2006, five replant accessions, 2 second-tries, and 8 new accessions were seeded in the greenhouse. All but one of the accessions had poor germination and were reseeded in an attempt to get enough plants.

In May 2007, three new accessions were added to the Texas Coastal Prairie ecoregion plot. All three ecoregion plots and the cultivar were evaluated for field performance in November 2007 (Tables 1-4). In the Texas Coastal Prairie plot accession 9090300-Kleberg stood out as the top performer, followed by 9093273-Aransas. Accession 9086124-Kleberg continued to be an early seeder with poor survival. In the Rio Grande Plains plot, accession 9086187-Kenedy stood out with the best performance, followed by 9086188-Kenedy. Seed was harvested from all plots and will be germination tested in 2008. The cultivar was removed by STN at the end of 2007 to make room for other plantings.

In December 2007, 6 second-tries, and 2 new accessions were seeded in the greenhouse (Table 5). All had poor germination. Three accessions were added to the Texas Coastal Prairie plot in May of 2007. The State NRCS Office requested Field Offices to send in more collections in 2007. Accessions will be added to the plot as received.

Off-Site Evaluations: STN has 22 accessions and 2 cultivars in an off-site observation plot at Rio Farms.

In 2006, yellow Indiangrass plants of accession 9089224 were sent along with other species to several locations for evaluation for horticultural use. Plants were sent by South Texas Natives (STN) to the San Antonio Botanic Gardens, the Corpus Christi Botanic Gardens, the World Birding Center at Bentsen State Park, TAES Uvalde, and TAES Dallas.

At Bentsen State Park the plants were considered to be good performers, but useful mainly as a mass planting as it is not particularly interesting as a specimen plant. The plants sent to TAES Dallas were judged to have a good green color and to be the best fall performers.

STN also sent accession 9089224 to the Nobel foundation in 2006. By the end of 2007 it had 0% survival.

In previous years, the seed harvests of yellow Indiangrass from the PMC plots have had poor seed fill. To test if this is due to location, plants were sent to Katy TX in 2007. These plants were harvested and the seed will be tested for fill in 2008. Until the seed fill issue has been solved, this project will be on hold for selections.

Table 1. Study STPMC-P-0353- RA Yellow Indiangrass PMC Initial Field Evaluation 2007

Texas Coastal Prairie Ecotype – PMC Block B (clay soil)

Accession Number	Source (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*
9086124	Kleberg	32	100	8.0	9.0	8.0	5.0	5.0
9088693	Aransas	94	100	5.0	5.0	5.0	5.0	5.0
9086221	Galveston	84	100	5.0	5.0	5.0	5.0	5.0
9090335	Victoria	100	100	5.0	5.0	5.0	5.0	6.0
9090287	Kleberg	100	100	5.0	6.0	5.0	5.0	4.0
9090300	Kleberg	100	100	3.0	3.0	5.0	5.0	3.0
9089164**	Montgomery	43	100	5.0	5.0	5.0	5.0	6.0
9093273	Aransas	100	100	4.0	5.0	5.0	5.0	4.0
9067253	Matagorda	67	100	6.0	6.0	5.0	5.0	7.0
9093318	Harris	100	new	5.0	5.0	5.0	5.0	6.0
9093304	Fort Bend	100	new	5.0	5.0	5.0	5.0	5.0
9093223	Galveston	100	new	5.0	5.0	5.0	5.0	5.0

*Ocular estimate (1= Best)

** Determined to be big bluestem

Table 2. Study STPMC-P-0353- RA Yellow Indiangrass PMC Initial Field Evaluation 2007

Rio Grande Plains Ecotype – PMC Block G (clay soil)

Accession Number	Source (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*
9090271	Wilson	94	100	6.0	6.0	5.0	5.0	5.0
9090272	Goliad	98	100	5.0	6.0	5.0	5.0	5.0
9089224	Wilson	100	100	5.0	5.0	5.0	5.0	5.0
9090294	Brooks	50	100	5.0	6.0	5.0	5.0	4.0
9068187	Kenedy	100	100	4.0	4.0	5.0	5.0	4.0
9086188	Kenedy	94	100	4.0	4.0	5.0	5.0	4.0
9093164	Bexar	92	100	6.0	6.0	5.0	5.0	5.0
9093170	Bexar	86	100	5.0	6.0	5.0	5.0	6.0

*Ocular estimate (1= Best)

Table 3. Study STPMC-P-0353- RA Yellow Indiangrass PMC Initial Field Evaluation 2007

South Texas Sand Plain Ecotype – PMC Annex (sandy soil)

Accession Number	Source (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*
9086124	Kleberg	96	75	8.0	8.0	8.0	5.0	5.0
9090300	Kleberg	83	75	9.0	8.0	8.0	5.0	9.0

*Ocular estimate (1= Best)

Table 4. Study STPMC-P-0353- RA Yellow Indiangrass PMC Initial Field Evaluation 2007

Cultivar – Wildlife Complex (sandy soil)

Accession Number	Source (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*
Lometa	commercial	36	90	6.0	7.0	5.0	5.0	6.0

*Ocular estimate (1= Best)

Table 4. Study STPMC-P-0353- RA Yellow Indiangrass

PMC Greenhouse Germination 2007

Accession Number	Origin (County)	15 Days %	30 Days %	45 Days %
9093230*	Gonzales	0	0.3	0.3
9093231*	Kenedy	0	0	0
9093232*	Kenedy	0.2	0.2	0.2
9093233*	Brooks	0	0	0
9093234*	Kenedy	0	0	0
9093235*	Brooks	0	0	0
9093361	Galveston	0.1	0.5	1.3
9093367	Aransas	0.1	0.2	0.2

* Accessions for replants.

Study Number: STPMC-P-0354- RA

Study Title: Assembly and Evaluation of Eastern Gamagrass (*Tripsacum dactyloides*)

Introduction: Eastern gamagrass (*Tripsacum dactyloides*) is a rhizomatous, native perennial grass (Hutch, Schuster & Drawe, 1999). It grows 1.5 to 3 meters tall, and forms large clumps (Gould, 1975). Its inflorescence consists of a single spicate raceme 12-25 cm long (or 2-3 erect spikelike racemose branches) with staminate spikelets above and pistillate spikelets below (Gould, 1975). Eastern gamagrass blooms summer thru fall (Correll & Johnston, 1979). It provides good livestock forage and is used as a pasture grass on bottomlands and prairies (Hutch, Schuster & Drawe, 1999). It also provides good wildlife cover and seed (Hutch, Schuster & Drawe, 1999). It grows in all regions of the State, but is most common in the eastern portions in low, moist, little-disturbed grassland sites (Gould, 1975). The range of eastern gamagrass extends throughout the eastern half of the United States, west to Nebraska, Kansas, Oklahoma, and Texas, south to northern Mexico, and in the West Indies (Gould, 1975).

Problem: There is a need for native, adapted seed available at a reasonable price for restoration and reclamation of habitat along the Texas Coastal Prairie.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of eastern gamagrass. Eastern gamagrass collections will be evaluated for adaptation in the region along the Texas coast known as the Texas Coastal Prairie.

Discussion: At the end of 2005 there were six accessions in the Texas Coastal Prairie ecoregion plot. Seed was harvested in August 2005 and germination ranged from 1-5%. The low germination may be due to a lack of seed fill and/ or mechanical dormancy caused by the hard layers covering the seeds.

This plot was evaluated for field performance in April and November of 2006. Field performance of all the accessions was good, but again seed production was minimal and no harvest was collected. Accession 9088888-Brazoria is a smaller, thinner leaved form of eastern gamagrass. One new accession was seeded in the greenhouse in December 2007. It had 4% germination and will be added to the Texas Coastal Prairie plot in the spring of 2008. The State NRCS Office will be requesting Field Offices to send in more collections in 2008. This project will be on hold until more collections are received.

In 2006, eastern gamagrass plants of accession 9088888 were sent along with other species to several locations for evaluation for horticultural use. Plants were sent by South Texas Natives (STN) to the San Antonio Botanic Gardens, the Corpus Christi Botanic Gardens, the World Birding Center at Bentsen State Park, TAES Uvalde, and TAES Dallas.

At Bentsen State Park the plants were considered to be good performers and interesting as a specimen plant. The plants sent to TAES Dallas were said to be open in the center with a sprawling habit.

Study Number: STPMC-P-0355- RA

Study Title: Assembly and Evaluation of Prairie Acacia (*Acacia angustissima*)

Introduction: Prairie acacia (*Acacia angustissima*), also known as fern acacia, is a perennial member of the Legume family (Correll and Johnston, 1996). It is a rounded sub-shrub and often forms colonies from woody rhizomes (Correll and Johnston, 1996). Prairie acacia's white to cream flowers occur in 1 cm wide heads (Correll and Johnston, 1996), and those are formed into terminal clusters (Ajilvsgi, 1984). It blooms from May to September (Correll and Johnston, 1996). This species is frequent in grasslands and open shrubby vegetation in the eastern two-thirds of the state, and rarely occurs west to the Plains Country (Correll and Johnston, 1996). It also occurs in Oklahoma, Arkansas, Montana, Florida, and Mexico (Correll and Johnston, 1996). Prairie acacia is high in protein and is eaten by cattle (Ajilvsgi, 1984). As it decreases under heavy grazing, it is a good indicator of range conditions (Ajilvsgi, 1984).

Problem: There is a need for perennial native legumes for range restoration, wildlife habitat, and xeriscaping in South Texas.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of prairie acacia. Prairie acacia collections will be evaluated for adaptation in the South Texas region.

Discussion: Fourteen accessions were in the initial evaluation plot at the end of 2005. Seed was collected in December of 2005 and was germination tested with and without 1 second of scarification in a sandpaper scarifier. With scarification, all accessions had germination that exceeded 70%.

Four accessions were added to the initial observation plot in June of 2006. This plot was evaluated for field performance in April and November of 2006. Three accessions have consistently stood out since 2004 with the tallest growth form, best forage production, good seed production, and good seed germination. These three were selected for a seed release: 9089174-McMullen Co., 9090706-Webb Co., and 9090685-Dimmit Co. No original seed was left of these accessions, so runners were rooted and planted in small isolated seed increase rows in 2007. No seed was produced in 2007. The 2008 seed harvest will be used to increase the plots. A release will be pursued in 2009 or 2010 dependent on the quantity of seed harvested.

Study Number: STPMC-P-0356- RA

Study Title: Assembly and Evaluation of Golden Dalea (*Dalea aurea*)

Introduction: Golden dalea is a perennial member of the Legume family (Correll and Johnston, 1996). One to several stems 3-5 dm long grow out from a semi-woody base (Correll and Johnston, 1996). The leaflets are dotted with glands containing a fragrant, volatile oil (Ajilvsgi, 1984). Its dense spikes are 2-5 cm long, and bloom with bright yellow flowers from May to July (Correll and Johnston, 1996). These flowers have a strong odor and produce a pod-like legume (Everitt, Drawe, & Lonard, 1999). White-tailed deer eat the leaves and flowers of this species (Everitt, Drawe, & Lonard, 1999). Golden dalea occurs in East to North Central Texas, and occasionally on the Gulf Coastal Plain (Correll and Johnston, 1996). Its range extends from South Dakota to Wyoming and south to Mexico (Correll and Johnston, 1996).

Problem: There is a need for perennial native legumes for range restoration, wildlife habitat, and xeriscaping in South Texas.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of golden dalea. Golden dalea collections will be evaluated for adaptation in the South Texas region.

Discussion: Eight accessions of yellow daleas were observed in an initial evaluation plot for two years. Two accessions of golden dalea (*Dalea aurea*), 9086308-Kenedy and 9076953-Kenedy, and two accessions of pussyfoot (*Dalea obvata*), 9076947-Victoria and 9086145-San Patricio, were chosen for seed increase and release. These four accessions were seeded in the greenhouse in December of 2006. They were planted in seed increase rows in the spring of 2007. Accessions 9076953 and 9076947 had very weak performance and were discontinued. The other accessions were seeded in the greenhouse again in December of 2007 and plants will be added to the seed increase rows in 2008. Due to the weak perennial nature of these species, it is likely that they will be treated like annuals. A release will be pursued after a sufficient quantity of seed is obtained.

Study Number: STPMC-P-0358- RA

Study Title: Assembly and Evaluation of Little Bluestem (*Schizachyrium scorparium*)

Introduction: Little bluestem (*Schizachrium scoparium*) is a native, perennial bunchgrass (Gould, 1975). *Schizachrium scoparium var. scoparium* is the variety commonly known as little bluestem. It grows 0.5-2 meters tall, and does not produce creeping rhizomes (Gould, 1975). The inflorescence blooms mainly from August to December and consists of numerous racemes 2.5-5 cm long (Gould, 1975). It occurs in tallgrass prairies, wood openings, rocky slopes of lightly grazed pastures, and rangeland throughout the State, except in the Pineywoods region (Gould, 1975).

Little bluestem is one of the four most important forage grasses in the tallgrass prairies regions (Gould, 1975). The other three important, widespread grasses are switchgrass, indiangrass, and big bluestem (Gould, 1975). Little bluestem provides good quality forage for livestock, has poor value for wildlife forage, but provides good cover (Hutch, Schuster & Drawe, 1999).

Problem: There is a need for native, adapted seed available at a reasonable price for restoration and reclamation of habitat in the South Texas region.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of little bluestem. Little bluestem collections will be evaluated for adaptation in two South Texas Ecoregions: the sandy soil regions along the Texas coast known as the Texas Coastal Prairie and the broad mixed-soil region known as the Rio Grande Plain.

Discussion: At the end of 2005, there were 9 accessions of little bluestem planted in the Texas Coastal Prairie Ecotype field plot, 32 accessions in the Rio Grande Plain Ecotype field plot, and 7 accessions in the "unknown bluestem" Rio Grande Plain Ecotype field plot.

In May of 2006, 4 accessions were added to the Texas Coastal Prairie field plot, 1 accession was added to the Rio Grande Plain plot, and 2 cultivars planted for comparison in an isolated plot. The Rio Grande Plains and Texas Coastal Prairie plots were evaluated for field performance in April of 2006 and the Texas Coastal Prairie plot was evaluated again in November 2006. In the Texas Coastal Prairie plot, accession 9089221-San Patricio stood out with the best field performance. Seed was not harvested in 2006 because little seed was produced in 2006 due to dry conditions. In December 2006, 6 replant accessions, 3 second-try accessions, and 1 new accession were seeded in the greenhouse.

In May of 2007, 1 accession was added to the Texas Coastal Prairie field plot and 2 accessions were added to the "unknown bluestem" Rio Grande Plain plot. All plots were evaluated for field performance in October or November of 2007 (Tables 1-4). In the Texas Coastal Prairie plot, accession 9089221-San Patricio again stood out with the best field performance. In the Rio Grande Plains plot accessions 9086180-Jim Wells, 9090283-Goliad, and 9090751-Bee stood out with top performance. Seed was harvested in 2007 from all plots and will be germination tested in 2008. The cultivar plot was taken out by STN at the end of 2007 to make room for other plantings.

In December 2007, 3 new accessions were seeded in the greenhouse (Table 5). Two cultivars and an accession from Knox City were also seeded for an observation plot, but germination numbers were not kept. Accessions with enough plants will be transplanted into the appropriate ecoregion plots in the spring of 2008. Additional accessions will be added as received.

Offsite Evaluations: STN has 77 accessions of little and seacoast bluestem at Rio Farms in Monte Alto, Texas and 43 accessions at Bladerunner Farms in Poteet, Texas for offsite evaluation.

In previous years, the seed harvests of little bluestem have had poor seed fill. Plants of accession 9089221-San Patricio (the top performer in the Texas Coastal Prairie plot) were sent to Katy in 2007. They did not produce a seed harvest in 2007. The plants will be harvested in 2008 and the seed will be tested for germination and fill. Until the seed fill issue has been solved, this project will be on hold for selections.

Table 1. Study STPMC-P-0358- RA Little Bluestem PMC Initial Field Evaluation 2007

Texas Coastal Prairie Plot (clay soil)

Accession Number	Source (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*
9086219	Harris	86	100	5.0	5.0	5.0	5.0	6.0
9086224	Colorado	70	50	7.0	7.0	7.0	5.0	6.0
9089221	San Patricio	98	100	4.0	4.0	5.0	5.0	3.0
9089161	Montgomery	20	25	8.0	8.0	8.0	5.0	8.0
9090334	Victoria	98	100	5.0	4.0	5.0	5.0	5.0
9090749	Matagorda	74	100	5.0	5.0	5.0	5.0	5.0
9089242	Victoria	62	100	6.0	6.0	5.0	5.0	5.0
9090748	Matagorda	64	100	6.0	6.0	6.0	5.0	6.0
9093224	Fort Bend	48	80	7.0	7.0	6.0	5.0	7.0
9067251	Matagorda	84	60	6.0	6.0	5.0	5.0	6.0
9067352	Matagorda	88	90	5.0	5.0	5.0	5.0	5.0
9067252	Matagorda	92	100	5.0	4.0	5.0	5.0	5.0
9093274	Aransas	96	100	5.0	5.0	5.0	5.0	3.0
9093301	Fort Bend	100	new	6.0	5.0	6.0	5.0	-

*Ocular estimate (1= Best, 5 average)

Table 2. Study STPMC-P-0358- RA Little Bluestem PMC Initial Field Evaluation 2007

Rio Grande Plains Plot (clay soil)

Accession Number	Source (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*
9090266	Goliad	90	100	7.0	7.0	5.0	5.0	6.0
9090289	Wilson	94	100	7.0	7.0	5.0	5.0	5.0
9086176	Bexar	86	100	6.0	6.0	5.0	5.0	5.0
9090371	Medina	84	100	7.0	7.0	7.0	5.0	6.0
9086178	Karnes	94	100	6.0	6.0	5.0	5.0	5.0
98086225	Goliad	90	100	7.0	7.0	6.0	5.0	6.0
9086180	Jim Wells	98	100	4.0	4.0	4.0	5.0	5.0
9086179	Atascosa	98	100	6.0	7.0	5.0	5.0	5.0
9089226	Wilson	100	100	6.0	7.0	5.0	5.0	5.0
9090487	Jim Wells	88	100	6.0	6.0	5.0	8.0	5.0
9090424	Kinney	90	100	6.0	7.0	5.0	5.0	5.0
9090288	Wilson	62	100	7.0	7.0	7.0	5.0	6.0
9086177	Atascosa	0	-	-	-	-	-	-
9089229	Wilson	80	100	7.0	7.0	7.0	5.0	6.0
9064474	DeWitt	84	100	5.0	6.0	5.0	5.0	5.0
9089245	Wilson	93	100	6.0	7.0	5.0	5.0	5.0
9090283	Goliad	87	100	4.0	4.0	5.0	5.0	5.0
9089231	Wilson	86	100	7.0	7.0	5.0	5.0	6.0
9090295	Wilson	54	100	8.0	7.0	7.0	5.0	6.0
9064461	Zavala	59	100	6.0	6.0	5.0	6.0	5.0
9089245	Wilson	78	100	7.0	7.0	7.0	5.0	6.0
9090751	Bee	88	100	5.0	4.0	5.0	5.0	5.0
9091775	Atascosa	88	100	6.0	5.0	5.0	5.0	5.0
9089226	Wilson	62	100	5.0	5.0	5.0	5.0	5.0
9090371	Medina	70	100	5.0	5.0	5.0	5.0	5.0
9091777	Atascosa	92	100	5.0	5.0	5.0	5.0	5.0
9091952	Bexar	100	100	5.0	6.0	5.0	5.0	5.0
9091954	Bexar	96	100	6.0	5.0	5.0	5.0	5.0
9091779	Atascosa	88	100	7.0	7.0	7.0	5.0	5.0
9091789	Atascosa	74	100	5.0	5.0	6.0	5.0	5.0
9091780	Atascosa	72	100	7.0	7.0	7.0	5.0	5.0
9091843	Zapata	60	100	6.0	6.0	6.0	5.0	3.0
9089225	Wilson	94	100	6.0	6.0	5.0	5.0	5.0

*Ocular estimate (1= Best, 5 average)

Table 3. Study STPMC-P-0358- RA Little Bluestem PMC Initial Field Evaluation 2007

"Unknown Bluestem" Plot (clay soil)

Accession Number	Source (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*
9091805	Jim Hogg	82	100	4.0	4.0	5.0	5.0	4.0
9090346	Jim Hogg	92	100	4.0	4.0	5.0	5.0	4.0
9086180	Jim Wells	64	100	5.0	4.0	5.0	5.0	5.0
9090280	Brooks	83	100	5.0	4.0	5.0	5.0	4.0
9090464	Jim Wells	81	100	5.0	4.0	5.0	5.0	4.0
9091812	Jim Hogg	70	100	5.0	5.0	5.0	5.0	5.0
9090262	Brooks	89	100	5.0	5.0	5.0	5.0	5.0
9089232	Wilson	100	new	5.0	5.0	5.0	5.0	5.0
9093227	Dimmit	100	new	5.0	5.0	5.0	5.0	5.0

*Ocular estimate (1= Best, 5 average)

Table 4. Study STPMC-P-0358- RA Little Bluestem PMC Initial Field Evaluation 2007

"Unknown Bluestem" Plot (clay soil)

Accession Number	Source (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*
Pastura	commercial	22	25	9.0	9.0	9.0	5.0	8.0
Cimarron	commercial	76	75	7.0	7.0	5.0	5.0	7.0

*Ocular estimate (1= Best, 5 average)

Table 5. Study STPMC-P-0358- RA Little Bluestem Greenhouse Germination 2007

Accession Number	Origin (County)	Ecoregion	15 Days %	30 Days %	45 Days %
9093351	Harris	Coastal	0	0	1.6
9093358	Galveston	Coastal	0	1.0	3.8
9093373	Washington	Coastal	2.0	4.9	19.0

Study Number: STPMC-P-0359- RA

Study Title: Assembly and Evaluation of Switchgrass (*Panicum virgatum*)

Introduction: Switchgrass (*Panicum virgatum*) is a native, perennial grass that occurs in clumps (Gould, 1975). It grows 0.6-3 meters tall, and forms scaly, creeping rhizomes (Gould, 1975). The inflorescence blooms mainly from late August to October and consists of open panicles 15-55 cm long bearing spikelets (Gould, 1975). Switchgrass is found in moist lowlands throughout all regions of the State (Gould, 1975). Its range extends from Southeastern Canada, through the United States except on the Pacific coast, into northern Mexico, and Cuba (Gould, 1975).

Switchgrass is one of the four most important forage grasses in the tallgrass prairies regions (Gould, 1975). The other three important, widespread grasses are big bluestem, Indiangrass, and little bluestem (Gould, 1975).

Switchgrass was once a climax dominant on lowlands of coastal prairie (Hutch, Schuster & Drawe, 1999). It provides good quality forage for livestock, is a good seed producer, and provides good cover for ground nesting birds (Hutch, Schuster & Drawe, 1999). It is also good for shoreline stabilization and barriers to control wind and water erosion (Hutch, Schuster & Drawe, 1999).

Problem: There is a need for native, adapted seed available at a reasonable price for restoration and reclamation of habitat in the South Texas region.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of switchgrass. Switchgrass collections will be evaluated for adaptation in three South Texas Ecoregions: the sandy soil region known as the South Texas Sand Plain, the region along the Texas coast known as the Texas Coastal Prairie, and the broad mixed-soil region known as the Rio Grande Plain.

Discussion: At the end of 2005 there were two accessions in the Texas Coastal Prairie ecoregion plot, five accessions in the South Texas Sand Plain plot, and eight accessions in the Rio Grande Plains plot. Three more accessions were added to the Rio Grande Plains plot and one accession was added to the South Texas Sand Plain plot in August 2006. All plots were evaluated for field performance in April 2006 and the Texas Coastal Prairie plot was evaluated again in November 2006. All accessions performed well. In the South Texas Sand Plain plot, accession 9086191-Kenedy had the top performance. In the Rio Grande Plains plot, accessions 9089251-Wilson and 9086191-Kenedy had the best performance. Seed was collected from the Texas Coastal Prairie plot in December 2006 and will be germination tested in 2008.

Two replant accessions and two new accessions were seeded in the greenhouse in December of 2006. Neither accession had enough plants to add to the field plots in 2007.

All plots were evaluated for field performance in October or November of 2007 including the cultivar “Alamo” that STN had planted in an observation plot at the Wildlife Complex in 2005 (Tables 1-4). All accessions performed well. In the South Texas Sand Plain plot, accession 9086191-Kenedy again had the top performance. In the Rio Grande Plains plot, accessions 9089251-Wilson and 9086191-Kenedy again had the best performance with higher foliar

density. Seed was collected from all plots in 2007 and will be germination tested in 2008. The cultivar planting was removed by STN at the end of 2007 to make room for other plantings.

One new accession was received in 2007, but it had no seed fill. The State NRCS Office will be requested Field Offices to send in more collections of switchgrass in 2007. New accessions will be added to the plots as received.

In previous years, the seed harvests of switchgrass have had poor seed fill. To test if this is due to location, plants were sent to Katy and Stephenville, TX in 2007. These plants were harvested and the seed will be tested for fill and germination in 2008. Until the seed fill issue has been solved, this project will be on hold for selections.

King Ranch Seed Evaluation: The King Ranch brought in seed harvested from an observation plot in 2004. This plot was grown from seed collected from multiple populations of switchgrass on the King Ranch. The PMC was asked to assist with improving the germination and selection of this collection. Seed was planted in a flat in the greenhouse and seedlings that emerged by the seventh day were transferred to another tray. One hundred of these earlier germinating seedlings were planted in an observation plot in June of 2005 at the King Ranch Norias Division. The plot performed well, but plants were highly variable for multiple traits. Seed was collected from this plot in November and December and was germination tested in 2006. After seed was screened with a South Dakota seed blower for heavy seed, the November harvest had 65.9% germination and the December harvest had 95.5%.

In March of 2006, the 100 plants were evaluated for field traits. Only 43 were kept and the rest were removed. Seed was collected from these 43 plants individually in October and again in November 2006. The plot was evaluated again in August of 2007, and 8 plants were selected to keep. The rest were removed before seedheads emerged. Seed was harvested from these eight plants and will be used to form a new crossing block in 2008.

Table 1. Study STPMC-P-0359- RA Switchgrass Initial Field Evaluation 2007

Texas Coastal Prairie Ecoregion (clay soil)

Accession Number	Source (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*
9088695	Aransas	100	100	4.0	4.0	5.0	5.0	4.0
9090297	San Patricio	100	100	5.0	5.0	5.0	5.0	5.0

*Ocular estimate (1= Best)

Table 2. Study STPMC-P-0359- RA Switchgrass Initial Field Evaluation 2007

South Texas Sand Plain Ecoregion (sandy soil)

Accession Number	Source (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*
9086194	Kenedy	98	100	5.0	5.0	5.0	5.0	5.0
9086193	Kenedy	100	100	6.0	5.0	6.0	5.0	5.0
9086191	Kenedy	100	100	4.0	4.0	5.0	5.0	4.0
9089241	Brooks	64	100	5.0	5.0	5.0	6.0	5.0
9086192	Kenedy	100	90	6.0	6.0	5.0	5.0	5.0

*Ocular estimate (1= Best)

Table 3. Study STPMC-P-0359- RA Switchgrass Initial Field Evaluation 2007

Rio Grande Plain Ecoregion (clay soil)

Accession Number	Source (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*
9086194	Kenedy	98	100	5.0	5.0	5.0	5.0	4.0
9090293	Goliad	96	100	5.0	5.0	5.0	5.0	5.0
9089243	Wilson	100	100	5.0	5.0	5.0	7.0	5.0
9089251	Wilson	100	100	5.0	4.0	5.0	5.0	5.0
9086191	Kenedy	100	100	5.0	4.0	5.0	5.0	5.0
9089241	Brooks	100	100	5.0	7.0	5.0	5.0	5.0
9093168	Bexar	100	100	5.0	5.0	5.0	5.0	5.0
9089249	Wilson	96	100	5.0	6.0	5.0	5.0	5.0
9086193	Kenedy	98	100	5.0	6.0	5.0	5.0	4.0
9090383	La Salle	100	100	5.0	5.0	5.0	5.0	5.0
9086192	Kenedy	100	100	5.0	5.0	5.0	6.0	5.0

*Ocular estimate (1= Best)

Table 4. Study STPMC-P-0359- RA Switchgrass Initial Field Evaluation 2007

Wildlife Complex (sandy soil)

Accession Number	Source (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*
Alamo	commercial	100	100	6.0	6.0	5.0	5.0	5.0

*Ocular estimate (1= Best)

Study Number: STPMC-P-0566- RA

Study Title: Assembly and Evaluation of Indian Blanket (Firewheel) (*Gallardia pulchella*)

Introduction: Indian blanket (*Gallardia pulchella*) is also known as firewheel. It is an annual or weak perennial member of the Asteraceae family (Lehman, O'Brien, and White, 2005). It is often found in sandy areas and is common throughout the state, with its range extending from Nebraska, Colorado, and Arizona, rarely east into Arkansas, and south into Mexico (Correll and Johnston, 1996). It grows to 60 cm. tall, with aromatic leaves 2-8 cm. long (Lehman, O'Brien, and White, 2005). Ray flowers vary from red to red tipped with yellow to solid yellow and bloom from February to December (Lehman, O'Brien, and White, 2005). White-tailed deer eat the leaves of this species (Everitt, Drawe, and Lonard, 1999).

Problem: There is a need for native, adapted seed of forbs and legumes available at a reasonable price for restoration and reclamation of wildlife habitat in the South Texas region.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of Indian blanket. Indian blanket collections will be evaluated for adaptation in two South Texas Ecoregions: the sandy soil region known as the South Texas Sand Plain and the broad mixed-soil region known as the Rio Grande Plain.

Discussion: Twenty-four accessions of Indian blanket were seeded in the greenhouse in December 2004. All twenty-four accessions were transplanted into two field plots in the spring of 2005. The plot in Block G was used to observe the accessions on a clay soil. The plot at the Annex was used to observe the accessions on a sandier soil. These plots were evaluated in 2005 for survival, foliage density, plant vigor, seed production, and other desirable agronomic characteristics that would make it a desirable range plant for South Texas.

The growth form of the plants fell into five groupings. Nineteen of the twenty-four accessions were *Gaillardia pulchella* (indicated with "r" on charts). Eight of these accession had a taller and more upright growth form (indicated with "-tall" on charts). These accessions also produced most of their seed earlier in the season and had a shorter lifespan. Seven of the accessions had a shorter, mounded growth form (indicated with "-short" on charts). These accessions lived longer and produced seed throughout the summer. Two accessions seemed to be an intermediate of these two forms (indicated with "-mix" on charts). One *Gaillardia pulchella* accession (9093225) had thicker, green-blue leaves, more yellow to the tips of the ray flowers, lived longer, produced more seed and bloomed constantly for the entire year on the clay soil. This accession will be pursued separately as a potential cultivar release. A small seed increase plot was started in 2006 and was expanded in 2007.

Six of the accessions were actually *Gaillardia aestivalis*. These are smaller plants, produce less flowers, and considerably less seed. They also release their seed more easily and so seed shatter is a problem with this species. Overall they had less volunteer seedlings the following spring. One accession (9086242) of the six had a spreading form and may have potential as a native groundcover. Seed was collected throughout the summer of 2005 and was germination tested in the spring of 2006.

A new accession from Galveston County was collected in 2006 that looked very similar to the top performing accession in 2005 (9093225). This accession was seeded in the greenhouse in December of 2006 and had a 19% germination rate. It was planted in the field in the spring of 2007. Another similar collection was made in Nueces county in 2007. It was seeded in the

greenhouse and had a germination rate of 20.3 %. This accession will be transplanted into the field in 2008. After these accessions are observed and evaluated, all field evaluations and seed germination results will be compared to select accessions for release in 2010.

Off-Site Evaluations: In 2006, Indian blanket plants of accession 9093225 were sent along with other species to several locations for evaluation for horticultural use. Plants were sent by South Texas Natives (STN) to the San Antonio Botanic Gardens, the Corpus Christi Botanic Gardens, the World Birding Center at Bentsen State Park, TAES Uvalde, and TAES Dallas.

At Bentsen State Park only one of the three plants sent survived. It did not have great performance, but was still blooming in November. Only one of the three plants sent to TAES Dallas survived and was judged to not perform as well as commercial selections already in the garden.

Study Number: STPMC-P-0567- RA

Study Title: Assembly and Evaluation of Mexican Hat (*Ratibidia columnaris*)

Introduction: Mexican hat (*Ratibidia columnaris*) is also known as prairie coneflower. It is a perennial member of the Asteraceae family (Lehman, O'Brien, and White, 2005). The name *R. columnifera* is sometimes used by authors, but is botanically unrecognized (Correll and Johnston, 1996). It is abundant in open usually calcareous soils over the western two-thirds of the state and absent only in extreme East Texas, with its range including North Dakota, South Dakota, Illinois, Missouri, Arkansas, Minnesota, Nebraska, Kansas, Oklahoma, Texas, Montana, Colorado, Wyoming, New Mexico, and south into Mexico (Correll and Johnston, 1996). It grows to 20-75 cm. tall (Lehman, O'Brien, and White, 2005). Ray flowers vary from red-brown tipped with yellow to solid red-brown or yellow and bloom from April to June and sparingly in the fall (Lehman, O'Brien, and White, 2005). White-tailed deer and cattle eat the leaves of this species and Rio Grande turkeys eat the seeds (Everitt, Drawe, and Lonard, 1999).

Problem: There is a need for native, adapted seed of forbs and legumes available at a reasonable price for restoration and reclamation of wildlife habitat in the South Texas region. .

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of Mexican hat. Mexican hat collections will be evaluated for adaptation in two South Texas Ecoregions: the sandy soil region known as the South Texas Sand Plain and the broad mixed-soil region known as the Rio Grande Plain.

Discussion: Three accession of Mexican hat were seeded in the greenhouse in February of 2002. These were planted at the Annex in June of 2002. The plot performed well but survival over the winter into 2003 was poor due to root rot. This plot was evaluated and seed was collected in 2002 and 2003. Due to poor survival, the plot was discontinued in February 2004. It was decided that this species would have to be grown as an annual.

Twenty-nine accessions of Mexican hat were seeded in the greenhouse in December 2004. Twenty-four accessions were transplanted into two field plots in the spring of 2005. The plot in Block G was used to observe the accessions on a clay soil. The plot at the Annex was used to observe the accessions on a sandier soil. The plots were evaluated for field performance during 2005. Two main growth forms were observed. One was a taller and more upright form with the flower heads on long stems above the leaves. The other form was shorter and rounder with flower heads just above the leaves. Accession 9090317 contained mixed color types including red, yellow, and a rust orange. It would be a good accession for color selection. Seed was collected from both plots in 2005 and was germination tested in 2007. Volunteer seedlings were not seen in the plot during the evaluation period, but volunteer seedling emergence was observed in March 2006. Accessions varied greatly in the number of original plants survival and the number of seedlings in the plots. There were no apparent insect or disease problems. The field evaluations and seed germination results will be compared to select accessions for three potential releases in 2010.

Study Number: STPMC-P-0568- RA

Study Title: Assembly and Evaluation of Partridge Pea (*Chaemaecrista fasciculata*)

Introduction: Partridge pea (*Chaemaecrista fasciculate*) is an annual member of the Fabaceae family (Lehman, O'Brien, and White, 2005). It is mainly found in sandy soils of open woods and fields in the eastern and central portions of the state. Its range extends into much of the Eastern United States (Correll and Johnston, 1996). It grows to 20-90 cm. tall, with pinnate leaves (Lehman, O'Brien, and White, 2005). The yellow flowers are solitary or paired and bloom from June to December (Lehman, O'Brien, and White, 2005). The seeds of this species are eaten by bobwhite quail, and white-tailed deer occasionally eat the leaves (Everitt, Drawe, and Lonard, 1999).

Problem: There is a need for native, adapted seed of forbs and legumes available at a reasonable price for restoration and reclamation of wildlife habitat in the South Texas region.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of partridge pea. Partridge pea collections will be evaluated for adaptation in the sandy soil region known as the South Texas Sand Plain.

Discussion: Ten accessions of partridge pea were seeded in the greenhouse in December 2004. Five accessions were transplanted into a field plot at the Annex in the spring of 2005. The plot was evaluated for field performance during 2005. Accession 9091774 had a lower survival due to harvester ants. There were no other apparent insect problems. All of the other accessions had similarly good performance. Seed is produced indeterminately on this species and pods open readily when dry, so seed shatter is a problem. Limited seed was collected due to seed shatter after a rainstorm. Seed was germination tested in 2006. Volunteer seedlings were not seen in the plot during the evaluation period, but volunteer seedling emergence was observed in March 2006. None of the original plants survived, but accession 9091921 in particular had numerous seedlings. One new accession was received in 2007. More collections for this species will be requested by the State Office in 2008 in order to represent a wider geographic area.

Study Number: STPMC-P-0569- RA

Study Title: Assembly and Evaluation of Clammyweed (*Polanisia* spp.)

Introduction: Clammyweed (*Polanisia* spp.) is an annual member of the Capparidaceae family (Lehman, O'Brien, and White, 2005). There are five species native to North America with two of these native to South Texas, *Polanisia dodecandra* and *Polanisia erosa* (Correll and Johnston, 1996). Both are further divided into subspecies. They are found in sandy soils of open woods and fields or in deep sands (Lehman, O'Brien, and White, 2005). *Polanisia dodecandra* grows to 60 cm high and has pink to purple blooms from April to October. *Polanisia erosa* grows to 50 cm high and has yellow flowers blooming from April to November (Lehman, O'Brien, and White, 2005). The name clammyweed refers to the sticky residue left on hands after the plant is handled (Ajilvsgi, 1984). Seeds of this species may be eaten by bobwhite quail.

Problem: There is a need for native, adapted seed of forbs and legumes available at a reasonable price for restoration and reclamation of wildlife habitat in the South Texas region.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of clammyweed. Clammyweed collections will be evaluated for adaptation in the sandy soil region known as the South Texas Sand Plain.

Discussion: Six accessions of clammyweed were seeded in the greenhouse in December 2004. All six accessions were transplanted into a field plot at the Annex in the spring of 2005. The PMC plot was evaluated for field performance during 2005. Accession 9090738 was particularly weak, produced no seed, and died during the evaluation period. All of the other accessions had similar, good performance. The entire plot was regularly attacked by leaf eating insects. Seed is produced indeterminately on this species and seed shatter is a problem. Volunteer seedlings were seen in and outside the plot during the evaluation period, but not the following spring. Seed was collected and was germination tested in 2006. The May harvest had very good germination, but the June-October harvests had particularly low germination.

Offsite Evaluation: The accessions were also planted and evaluated at Rio Farms in 2005 by South Texas Natives. Seed was collected and bulked for the year. This was germination tested in January 2006. Most of the germination occurred quickly, as 82% germinated on days 2-5 and no seeds germinated after day 15.

In 2006, clammyweed plants were sent along with other species to several locations for evaluation for horticultural use. Plants were sent by South Texas Natives (STN) to the San Antonio Botanic Gardens, the Corpus Christi Botanic Gardens, the World Birding Center at Bentsen State Park, TAES Uvalde, and TAES Dallas. Both Bentsen State Park and TAES Dallas thought the species was attractive but had too short of a blooming period and was too short lived to be of horticulture use. Its use would be restricted to wildlife gardens.

STN plans to release clammyweed in 2009. The release will consist of accessions 9089005-Dimmit and 9091926-Zapata. Seed increase fields will be planted both as direct seeding and transplants in 2008.

Study Number: STPMC-P-0570- RA

Study Title: Assembly and Evaluation of Plains Lovegrass (*Eragrostis intermedia*)

Introduction: Plains lovegrass (*Eragrostis intermedia*) is a native, perennial grass that occurs in tufts or dense clumps (Gould, 1975). Its culms grow 55-90 centimeters tall (Gould, 1975). The inflorescence blooms mainly from June to November and consists of open panicles 20-40 cm long bearing spikelets (Gould, 1975). It provides good to fair forage and provides bird nesting cover (Hatch, Schuster, and Drawe, 1999). Plains lovegrass is often found on disturbed soil in sand, clay or rocky ground throughout all regions of the State except the Pineywoods, Rolling Plains, and High Plains (Gould, 1975). Its range extends from southern Arizona through southern and eastern Texas, Alabama to southwest Arkansas, and also in the mountainous portions of Mexico and Guatemala (Gould, 1975).

Problem: There is a need for native, adapted seed available at a reasonable price for restoration and reclamation of habitat in the South Texas region.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of plains lovegrass. Plains lovegrass collections will be evaluated for adaptation in three South Texas Ecoregions: the sandy soil region known as the South Texas Sand Plain, the region along the Texas coast known as the Texas Coastal Prairie, and the broad mixed-soil region known as the Rio Grande Plain.

Discussion: Due to poor overwinter survival, six accession of plains lovegrass and a cultivar of sand lovegrass "Mason" (*Eragrostis trichodes*) were transplanted into an initial evaluation plot in July of 2006. This plot was evaluated for field performance in November of 2006. All of the accessions performed better than the sand lovegrass. One accession (9090664-Maverick) was much greener and denser than the other accessions. It may be a different lovegrass species. Seed was harvested in November and will be germination tested in 2008.

This plot was again evaluated for field performance in November of 2007 (Table 1). All of the accessions performed better than the sand lovegrass. Accessions 9090664-Maverick and 9090565-Frio had better vigor and density than the other accessions. Seed was harvested in November and will be germination tested in 2008. No new accessions were received in 2006 or 2007. More collections for this species will be requested by the State Office in 2008 in order to represent a wider geographic area. Accessions will be added to the field plots as received.

Table 1. STPMC-P-0570- RA Plains Lovegrass - Initial Field Evaluation 2007

Accession Number	Origin (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*
9088814	Duval	82	100	5.0	5.0	5.0	5.0	4.0
9090565	Frio	80	100	3.0	3.0	5.0	5.0	5.0
9090593	Atascosa	66	100	5.0	5.0	7.0	5.0	5.0
9090664	Maverick	98	100	3.0	3.0	5.0	5.0	3.0
9091765**	Kleberg	70	80	7.0	7.0	7.0	5.0	6.0
9091868	Hidalgo	20	80	8.0	8.0	8.0	5.0	7.0
"Mason"	sand lovegrass	78	100	6.0	5.0	5.0	5.0	5.0

*Ocular estimate (1 = Best)

** From a Gulf Coast county, but planted for observation and comparison.

Study Number: STPMC-P-0571- RA

Study Title: Assembly and Evaluation of Gayfeather (*Liatris* spp.)

Introduction: Gayfeather (*Liatris* spp.) is a perennial member of the Asteraceae family (Lehman, O'Brien, and White, 2005). There are forty species confined to North America with twelve of these native to Texas and seven native to South Texas (Correll and Johnston, 1996). The plants form underground corms (Correll and Johnston, 1996). The flowers are usually purple and rarely white, with ray flowers absent and disk flowers numerous (Correll and Johnston, 1996). They can be found on sand, clay, caliche, or loam soils depending on the species (Correll and Johnston, 1996 & Lehman, O'Brien, and White, 2005). White-tailed deer eat the leaves of this species (Everitt, Drawe, and Lonard, 1999). The fall transplanted corms of gayfeathers do well under cultivation (Ajilvsgi, 1984). Corms have also been used to treat sore throat and rattlesnake bites resulting in another common name, button-snakeroot (Ajilvsgi, 1984).

Problem: There is a need for native, adapted seed of forbs and legumes available at a reasonable price for restoration and reclamation of wildlife habitat in the South Texas region. .

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of gayfeather. Gayfeather collections will be evaluated for adaptation in three South Texas Ecoregions: the sandy soil region known as the South Texas Sand Plain, the region along the Texas coast known as the Texas Coastal Prairie, and the broad mixed-soil region known as the Rio Grande Plain.

Discussion: At the end of 2005, there were 5 accessions of gayfeather in Block C to observe the accessions on a clay soil and three accessions in a plot at the Annex to observe the accessions on a sandier soil. Both plots were evaluated for field performance in April of 2006 and the clay plot was evaluated again in November (Table 1). For the third year, accession 9086149-Kleberg Co. outperformed the other accessions, but it was very large and prostrate in form and not a likely candidate for native horticulture use. No new accessions were added in 2006. The plot at the Annex was removed at the end of 2006 and will be replanted.

Two replant accessions and six new accessions were seeded in the greenhouse in December of 2006. Germination was poor. One accession had enough seedlings and was added to the evaluation plots in May 2007. Both plots were evaluated for field performance in November of 2007 (Table 1). The new accession 9093340-Harris appeared to have a growth form with potential for native horticulture use. This will need to be confirmed with additional evaluations.

Two new accessions were seeded in the greenhouse in December of 2007 (Table 2). They will be added to the field plots in 2008. More collections for this species will be requested by the State Office in 2008 in order to represent a wider geographic area. New accessions will be added to the plots as received.

Table 1. Study STPMC-P-0571- RA Gayfeather Initial Field Evaluation 2006

ANNEX (sandy soil)

Accession Number	Origin (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity*	Seed Production*
9093340	Harris	90	new	5.0	5.0	5.0	5.0	5.0

*Ocular estimate (1 = Best)

PMC (clay soil)

Accession Number	Origin (County)	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity*	Seed Production*
9086222	Galveston	20	75	7.0	7.0	7.0	5.0	6.0
9089101	Brazoria	0	0	-	-	-	-	-
9086149	Kleberg	42	100	5.0	5.0	5.0	5.0	4.0
9089162	Montgomery	50	100	5.0	5.0	5.0	5.0	5.0
9090733	Brazoria	14	100	5.0	5.0	5.0	5.0	5.0
9093340	Harris	60	new	5.0	6.0	5.0	5.0	5.0

*Ocular estimate (1 = Best)

Table 2. Study STPMC-P-0571- RA Gayfeather Greenhouse Germination Winter 2006

Accession Number	Origin (County)	15 Days %	30 Days %	45 Days %	60 Days %
9093362	Galveston	0	5.0	18.8	26.5
9093380	Duval	4.5	5.0	5.5	12.5

*Replant accession

** Decrease in germination due to death loss.

Study Number: STPMC- P-0672-RAWL

Study Title: Assembly and Evaluation of Southwestern Bristlegrass (*Setaria scheelei*)

Introduction: Southwestern bristlegrass [Setaria scheelei (Steud.) A.S. Hitchc.] is a warm-season, perennial bunch grass that is native from Texas and Arizona, south to Northern Mexico (Gould, 1975). In Texas, southwestern bristlegrass is found in the South Texas Plains, Edwards Plateau, Rolling Hills, High Plains, Trans Pecos, and the southern portions of the Blackland Prairies and Gulf Prairies and Marshes regions (Gould, 1975). It is a coarse grass with tall, spreading culms growing to 125 cm (Gould, 1975 & Hatch, Schuster, and Drawe, 1999). It is a shade tolerant species and is often abundant in shaded canyons and open woodlands (Gould, 1975). It is a good forage species and produces a large seed useful to wildlife (Hatch, Schuster, and Drawe, 1999). The objective of this study is to seek out accessions of southwestern bristlegrasss with good germination for further evaluation as a warm-season forage for south Texas. Other factors will be compared, such as plant hardiness, forage production, seed production, and other characteristics that would make southwestern bristlegrass desirable to include in south Texas range and wildlife mixes. Future studies will examine southwestern bristlegrass's ability to compete with shade tolerant exotic species.

Problem: There is a need for native, adapted seed available at a reasonable price for restoration and reclamation of habitat in the South Texas region.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of southwestern bristlegrass. Southwestern bristlegrass collections will be evaluated for adaptation in the broad mixed-soil region known as the Rio Grande Plain.

Discussion: Two accessions (9088950-Atascosa Co. & 9089155-Medina) were brought in as southwestern bristlegrass and planted in an IEP plot at the PMC in 2003. Two other accessions of southwestern bristlegrass were found in the IEP of plains bristlegrass (9088959-Atascosa & 9089059-LaSalle Co.) Harvest germination from 2003 was initially low (0-4%). Seed from all four accessions were then screened for filled seed with a South Dakota seed blower. Germination was greatly improved in accession 9088950 (45%). Poor fill (15 seeds) but better germination (20%) was seen in accession 9088950. While the other two accessions continued to exhibit poor germination (3-4%).

A seed increase plot of accession 9088950 was established from original seed in August of 2006. Seed was harvested in 2007 and will be germination tested in 2008. No new accessions of southwestern bristlegrass have been received.

Study Number: STPMC- P-0701-RA Plantago spp.

Study Title: Assembly and Evaluation of *Plantago* spp.

Introduction: *Plantago* is a widely distributed genus consisting of 250 species, with 12 species occurring in Texas (Correll and Johnston, 1996), but only 5 of these occurring in the Coastal Bend (Lehman, O'Brien, and White, 2005). The three more common species in south Texas were chosen for this project, *Plantago rhodosperma, Plantago hookeriana*, and *Plantago aristata*. All three are annual herbs with a basal rosette of simple leaves (Lehman, O'Brien, and White, 2005). Flowers are crowded in a head or spike and born on a scape (Lehman, O'Brien, and White, 2005). *Plantago hookeriana* and *Plantago aristata* are more common on sandy soils and *Plantago rhodosperma* is found on heavier sands and clays (Lehman, O'Brien, and White, 2005). *Plantago hookeriana* leaves are eaten by Rio Grande turkey, white-tailed deer, and cattle and the seeds are eaten by bobwhite quail and mourning doves (Everitt, Drawe, and Lonard, 1999). *Plantago rhodosperma* leaves are eaten by white-tailed deer, cattle, and the Texas tortoise and the seeds are eaten by bobwhite quail and mourning doves (Everitt, Drawe, and Lonard, 1999).

Problem: There is a need for native, adapted seed available at a reasonable price for restoration and reclamation of habitat in the South Texas region.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of *Plantago* spp. *Plantago* spp. collections will be evaluated for adaptation in the broad mixed-soil region known as the Rio Grande Plain.

Discussion: Various species of plantains were seeded in the greenhouse by South Texas Natives (STN) in the spring of 2006. STN planted an Initial Evaluation plot of plantains at Beeville in 2006. This plot was evaluated for survival, foliage density, plant vigor, seed production, and other desirable agronomic characteristics that would make it a desirable range plant for South Texas.

From that evaluation STN chose four accessions (3 species) for release: *Plantago rhodosperma* accessions 9090496 and 9090507, *Plantago hookeriana* accession 9088561, and *Plantago aristata* accession 9088672. These accessions will be planted in seed increase plots in 2008. Harvest methods will also be addressed.

Study Number: STPMC- P-0702-RA Australian Saltbush

Study Title: Assembly and Evaluation of Australian Saltbush

Introduction: Australian saltbush (*Artriplex semibaccata*) is a perennial member of the Chenopodiaceae family. It is a perennial herb with prostrate stems from a woody taproot (Correll and Johnston, 1996). Stems are up to 1 meter long and form mats (Lehman, O'Brien, and White, 2005). Male and female flowers are separate, but found on the same plant and bloom from May to December (Lehman, O'Brien, and White, 2005). It is native to Australia but naturalized plants can be found at various sites in California, Arizona, New Mexico, and Texas (Correll and Johnston, 1996; Lehman, O'Brien, and White, 2005). A related species native to Texas, *Atriplex canescens* is palatable and browsed by cattle, sheep and goats (Everitt, Drawe, and Lonard, 1999).

Problem: There is a need for seed available at a reasonable price for restoration and reclamation of saline sites in the South Texas region.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of Australian saltbush. Naturalized Australian saltbush collections will be evaluated for adaptation in the broad mixed-soil region known as the Rio Grande Plain.

Discussion: Two collections of Australian saltbush, from naturalized populations found in Pecos and Regan County, Texas, were seeded in the greenhouse in December 2006. Both were transplanted into observation plots at the PMC in 2007. By November 2007 all plants had died, perhaps due to heavy rains. Both accessions were reseeded in the greenhouse in December of 2007. They will be replanted into the field in the spring of 2008. The plot will be evaluated for survival, foliage density, plant vigor, seed production, and other desirable agronomic characteristics that would make it a desirable range plant for saline sites in south and west Texas.

Advanced Evaluation Projects

Study Number: 77IO11HPJ

Study Title: Assembly and Evaluation of Bristlegrass (*Setaria* spp.)

Introduction: Plains bristlegrass is a warm-season, perennial bunch grass that is native from South Texas to New Mexico, Colorado and Arizona, and down into central Mexico (Gould, 1975; Hitchcock, 1971). Its current scientific name is *Setaria vulpiseta* although in the past *Setaria leucopila* and *Setaria texana* have been included under this common name (Correl & Johnston, 1996; Gould, 1975). Plains bristlegrass is found on open dry ground and in dry woods (Hitchcock, 1971) and "on well drained soils along gullies, stream courses, and other areas occasionally with abundant moisture" (Gould, 1975, p.557). It provides moderate to high quality forage for all types of grazing livestock (Gay, Dwyer, Allison, Hatch, and Schickendanz, 1980), and makes up "an appreciable part of the forage on southwestern ranges" (Hitchcock, 1971, p.718).

Other species in this genus also occur in SouthTexas including *Setaria leucopila, S. texana, S. firmula, S. ramesetii, S. reverchonii,* and *S. scheelei.* These species show promise as plants for multiple uses, although our main emphasis is on range restoration and wildlife uses. The objective of this study is to seek out accessions of any species of bristlegrass with good germination for further evaluation as a warm-season grass for south Texas. Future studies will examine factors such as plant hardiness, forage production, seed production, and other characteristics that would make bristlegrass desirable to include in south Texas range and wildlife mixes.

Problem: There is a need for native, adapted seed available at a reasonable price for the restoration and reclamation of habitat in the South Texas Region.

Objective: The objective is to assemble, evaluate, select and release, and/or provide information on the propagation of bristlegrass. Bristlegrass collections will be evaluated for adaptation in two South Texas Ecoregions, the sandy soil region known as the South Texas Sand Plain and the broad mixed soil region known as the Rio Grande Plain.

Discussion: In 2006, four accessions (9038820-Willacy Co., 9029677-Karnes Co., 9038819-Bexar Co., and 9029648-Webb Co.) were released. Each accession was released separately (Kika820, Kika677, Kika819, and Kika648) and will be sold as a mechanical blend under the name Catarina blend bristlegrass. Catarina bristlegrass is a native perennial bunch grass growing 2 to 4 feet tall. It is a blend of bristlegrasses, three from clay soils and one from a sandy soil. It is recommended for upland wildlife plantings and in range seeding mixes. It produces desirable seed for upland game birds, provides good forage for domestic livestock, and cover for wildlife. It has excellent seed germination and good 3-day germination. The individual plants are long-lived. The plants produce multiple harvests of seed from May through November. Catarina bristlegrass was a cooperative release by *South Texas Natives,* TAES, and the E. "Kika" de la Garza Plant Materials Center.

Seed Increase Plots: Seed increase plots of accessions 9038820-Willacy Co., 9038715-Duval Co., 9029677-Karnes Co., 9038819-Bexar Co., and 9029648-Webb Co. were established at TAES Beeville in May of 2005. Seed was collected from these plots in 2005 and sent to MidWest Seed Service for testing. Active germination percentages were low, but it is hoped that this number will increase as the seed after-ripens. Seed was collected from these plots in 2006 and was distributed to seed dealers.

Small seed increase plots were established at the PMC in 2006 using the 2005 harvest from the Beeville plots. No harvest was made from these plots in 2006 due to late planting and dry conditions. To expand these plots, transplant trays were seeded in December of 2007. These plants will be transplanted to the seed increase plots in the spring of 2008. Four generations of seed for each accession were also seeded in the greenhouse in December of 2007. Generations included original seed, 2002 PMC harvest, 2003 Beeville harvest, and 2005 Beeville harvest. The plants for each generation were harvested from the previous generation. These plants will be used for a progeny test observation plot in 2008. Twenty accessions were also seeded for Dr. Byron Burson for a mode of reproduction study.

AEP Plantings: A seed emergence AEP plot was planned for 2006 at TAES Uvalde and the PMC consisting of the 4 released accessions and the common bristlegrass seed available from Douglas King Seed Co. STN planted their plot at TAES Uvalde in April of 2006. The plot was evaluated on July and September, but no seedlings were observed from any of the accessions in 2006. Approximately 5" of rain was received at the site from the planting date till the second evaluation.

Due to dry conditions, the PMC planting was postponed until spring of 2007. The plots were broadcast seeded then cultipacked on May 23, 2007 at the forage plots at the Norias Division of the King Ranch. The plots were evaluated for emergence in November of 2007 and no bristlegrass plants were observed.

Study Number: 77I049H

Study Title: Assembly and Evaluation of Brownseed Paspalum (*Paspalum plicatulum*)

Introduction: Brownseed paspalum (*Paspalum plicatulum*) is a native, warm-season, slightly rhizomatous perennial bunchgrass. It is native to Georgia, Florida, and Texas, south to Argentina, and in the West Indies (Hitchcock, 1971). In Texas, it is common in east and southeast Texas, and in the coastal part of the Rio Grande Plain. It is occasionally found west to North Central Texas, and the northern Rio Grande Plain (Correll & Johnston, 1996). It prefers sandy to sandy loam soils (Gould, 1975), and can be found in open woods and on prairies (Correll and Johnston, 1996). *Paspalum texanu*m, previously recognized as its own species is now included under *Paspalum plicatulum* (Gould, 1975). Gould (1975) notes that although there are some differences between the two, the morphological variability and wide range of adaptability of *Paspalum plicatulum* could easily account for the character differences. Therefore, he does not recognize *Paspalum texanum* as a separate taxon. Hitchcock (1971) includes the Brazilian native, *Paspalum nicorae*, under *Paspalum plicatulum* for similar reasons. *Paspalum plicatulum* flowers throughout most of the year (Gould, 1975). Its fruit turns dark brown at maturity (Correll and Johnston, 1996), thereby earning its common name of brownseed paspalum.

Problem: There is a need for native, adapted seed available at a reasonable price for the restoration and reclamation of native habitat in the South Texas region.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of brownseed paspalum. Brownseed paspalum collections will be evaluated for adaptation in three South Texas Ecoregions: the sandy soil region known as the South Texas Sand Plain, the region along the Texas coast known as the Texas Coastal Prairie, and the broad mixed-soil region known as the Rio Grande Plain.

Discussion: Five accessions showed good spring green-up and volunteer seedling emergence in the field in Beeville in 2004. These accessions were 9088647-Victoria, 9088651-Victoria, 9088681-Goliad, 9088644-Victoria, 9089219-San Patricio. A tetrazolium chloride (TZ) test, used to check for live but un-germinated seed, revealed that seed fill not seed dormancy was the largest factor in the seemingly low germination numbers. All five of these accessions were selected to move into advanced evaluation in 2005.

Seed Increase Plots: STN planted small seed increase plots at Rio Farms near Monte Alto, Texas in June of 2005. Seed harvested in July of 2005 had less than 5% seed fill across all accessions. STN made a hand harvest of these plots in April of 2006, but again germination was poor (0.7-8%). These plots were discontinued in 2007. The PMC plans to increase the King Ranch accession in 2008 and trays were seeded in December 2007 for an increase plot at the Norias Division.

AEP Plots: The PMC planted an advanced evaluation plot at the King Ranch, Norias Division in June of 2005. This consisted of the 5 accessions chosen from Beeville and a collection of Brownseed that the King Ranch brought in that they had been working with. This plot was evaluated for field performance in 2005. The King Ranch collection had the best performance. Accessions 9088644-Victoria and 9088681-Goliad also had good performance. Ergot was seen on all the accessions in November 2005. Seed was harvested in September 2005. This seed was germination tested in 2006. The King Ranch had a much higher harvest total. Although it

had the lowest germination percentage, it still had significantly more PLS than the other accessions.

This plot was evaluated again for field performance in 2006. The King Ranch collection, acessions 9088644-Victoria, and 9088681-Goliad all had good performance. Two attempts were made to harvest seed, in September and October, but all seed had shattered due to rainstorms.

This plot was evaluated again for field performance in May of 2007 (Table 1). Again, the King Ranch collection, accessions 9088644-Victoria, and 9088681-Goliad all had better performance than the other accessions. Seed was harvested in May of 2007. Ergot was present on the seedheads of all accessions. This harvest will be germination tested in 2008. All plants were dormant by November.

East Texas AEP: Another AEP was planted at the East Texas PMC in Nacogdoches, Texas in July 2005. The plot was evaluated in November of 2005. They also reported ergot on all accessions, but to a lesser degree on the King Ranch collection. The plot performed well and had no other apparent disease or insect problems. A small sample of seed was collected in December, but this was after most of the harvest had shattered. This seed was germination tested in 2006. The plot was evaluated for field performance again in July of 2006. Accession 9088644-Victoria had the best performance. A small seed harvest was made in May and another in July.

The AEP plot was burned in Feburary of 2007. The King Ranch accession took 14-16 days to begin regrowth after the burn. The other accessions were faster and only took 7-10 days to begin regrowth. The plot was evaluated in March and October of 2007 (Table 2). Seed was collected in June of 2007. The 2006 and 2007 harvests will be germination tested in 2008.

***New Accessions*:** Six new accessions, that were received after the AEP plots were established, were planted at the Norias for initial evaluation in June of 2006. This plot was evaluated for field performance in 2006, but no seed was harvested due to shattering. All accessions performed well. One new accession (9093343-Harris Co.) was seeded in the greenhouse in December 2006. Its germination was poor (0.8%), but it was reseeded in an effort to get enough plants to add to the plot in the spring of 2007. It was added to the plot in April of 2007.

This plot was evaluated for field performance in May 2007 (Table 3), and seed was harvested. Ergot was present on the seedheads of all accessions. All accessions performed well. All plants were dormant by November. One new accession (9093368-Aransas Co.) was seeded in the greenhouse in December 2007. It had 0% germination despite reseeding.

Table 1. Study Number: 77I049H Brownseed Paspalum Advanced Field Evaluation 2007

Norias Plot (sandy soil)

Accession Number	% Survival	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*	Seed Shatter*
9089219	37.5	6.0	6.0	6.0	5.0	5.0	5.0
9088644	70.0	3.8	3.8	3.8	5.0	4.5	5.0
9088647	50.0	5.8	5.8	5.8	5.0	5.0	5.0
9088681	62.5	4.0	4.0	4.0	5.0	4.0	5.0
9088651	32.5	5.5	5.3	5.5	5.0	5.5	5.3
King Ranch	72.5	4.8	4.5	4.5	5.0	5.0	5.0

*Ocular estimate (1 = Best & 5 = Average)

Table 2. Study Number: 77I049H Brownseed Paspalum Advanced Field Evaluation 2007

East TX PMC (sandy soil)

Accession Number	% Survival	% Seedling Recruitment	Plant Vigor*	Seed Production*
9089219	91.5	100	5.0	5.0
9088644	83.0	75	4.0	5.0
9088647	97.8	100	4.8	4.0
9088681	79.0	50	4.5	3.0
9088651	89.3	75	4.8	3.0
King Ranch	not evaluated	100	3.0	5.0

*Ocular estimate (1 = Best & 5 = Average)

Table 5. Study Number: 77I049H Brownseed Paspalum Initial Field Evaluation 2007

Norias Plot (sandy soil)

Accession Number	% Survival	% Regrowth	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*	Seed Shatter*
9089252	100	25	5.0	5.0	5.0	5.0	5.0	5.0
9093293	100	25	5.0	5.0	5.0	6.0	5.0	5.0
9093294	96	25	4.0	4.0	5.0	6.0	4.0	5.0
9090327	100	25	4.0	4.0	5.0	6.0	4.0	5.0
9090344	100	25	5.0	5.0	5.0	6.0	4.0	5.0
9090268	100	25	4.0	4.0	5.0	5.0	4.0	5.0
9093343	100	new	5.0	5.0	5.0	5.0	-	-

*Ocular estimate (1 = Best & 5 = Average)

Study Number: 770I52H

Study Title: Assembly and Evaluation of Windmillgrass (*Chloris* spp.)

Introduction: Hooded Windmillgrass (*Chloris cucullata*) is a native, perennial, warm-season grass that is often stoloniferous (Gould, 1975). Also known as 'Hooded Fingergrass', it can be found in prairies on sandy or gravelly soils, and occasionally on clayey soils (Correll and Johnston, 1996). It is native throughout Texas, Oklahoma, and New Mexico (Hitchcock, 1971) and the northeast portion of Mexico (Gould, 1975). In Texas, hooded windmillgrass is most abundant in the Rio Grande Plain, although it can be found throughout most of the state. It is rarest in the western plain, Trans-Pecos region, eastern, and southeastern Texas. Hooded windmillgrass has been known to hybridize with other *Chloris* species, particularly *Chloris verticillata*. Hybridization has been most common in the Rio Grande Plain, and hybrids have been given the names *Chloris latisquamea* or more currently *C*. *subdolichostachya*. Hitchcock (1971, p.29) provides excellent illustrations that may assist in differentiation of the species. The windmillgrasses provide fair quality forage for livestock, and tend to increase with heavy grazing. The strongly stoloniferous characteristic of shortspike windmillgrasss makes this an extremely desirable plant, especially for roadside plantings.

Problem: There is a need for native, adapted seed available at a reasonable price for restoration and reclamation of habitat in the South Texas region.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of hooded and shortspike windmillgrass. Hooded and shortspike windmillgrass collections will be evaluated for adaptation in two SouthTexas Ecoregions: the sandy soil region known as the South Texas Sand Plain and the broad mixed-soil region known as the Rio Grande Plain.

Discussion:

Seed Releases: In 2006, two accessions were released. Accession 9085260 was released under the name Welder Germplasm shortspike windmillgrass. Accession 9085313 was released under the name Mariah Germplasm hooded windmillgrass. Both were cooperative releases by South Texas Natives, TAES, and the E. "Kika" de la Garza Plant Materials Center in 2006.

Seed Increase Plots: Seed increase rows of accessions 313, 260, and 283 were planted by division at the PMC in 2004. A seed increase plot of accession 301 was started in 2005 to use for comparison to accession 313 in advanced evaluations. Seed harvested in 2006 will be tested in 2007 (Table 1) and 2008. The 310 and 283 plots were removed at the end of 2007 since they will not be pursued for release.

Seed increase fields of accessions 313 and 260 were also planted at Rio Farms in 2006. The plots got plenty of rain after planting and did well in 2006. Seed was harvested in the fall and will be germination tested in 2007 (Table 1). The October harvests from Rio Farms of both accessions were also germinated 2weeks after harvest, 3 months after harvest, and 6 months after harvest to look at seed dormancy (Table 2). The plots at Rio Farms did not regrow as well in 2007. Seed was harvested and will be germination tested in 2008.

Two generations of seed for each accession was also seeded in the greenhouse in December of 2007. Generations included 2004 PMC harvest and 2006 Rio Farms harvest. Original seed of these two accessions was exhausted during initial evaluations. The plants for Rio Farms were planted from seed harvested at the PMC. These plants will be used for a progeny test observation plot in 2008. This plot will continue to be observed for four generations.

Advanced Evaluation Plots: In June and July 2005, Advanced Evaluation Plots of transplants of hooded windmillgrass (accessions 313 and 301) and shortspike windmillgrass (accessions 260 and 283) were planted at the Kingsville, Knox City, and Nacogdoches Texas PMCs. Evaluations were conducted at the Kingsville and Nacogdoches PMCs in November of 2005. Plants performed well at both locations. Seed was harvested at the Kingsville PMC in November of 2005. This seed will be compared to the 2006 harvests.

The Kingsville and Nacogdoches plots were evaluated for field performance in 2006. All accessions performed well, but 313 and 260 had more vegetative cover than the other accessions. Seed was harvested from the Kingsville plot and will be germination tested in 2008. The Nacogdoches plot was burned in February 2007. The windmillgrasses were slow to recover from the burn and took three weeks to begin regrowth. The Kingsville and Nacogdoches plots were evaluated for field performance again in 2007 (Tables 3 and 4). Seed was harvested from the Kingsville and Nacogdoches plots in 2007 and will be germination tested in 2008. A seedling emergence trial was broadcast seeded then cultipacked on May 23, 2007 at the forage plots at the Norias Division of the King Ranch. The plots were evaluated for emergence in November of 2007 (Table 5).

STN also planted AEP plots of transplants at Rio Farms and at TAES Uvalde in April of 2006. These were evaluated twice in 2006. Seed was harvested from the Uvlade plot and will be tested in 2008. A seed emergence plot was also planted at Uvalde, but no emergence was observed. The site received only 5 inches of rain from the planting in April till September.

Table 1. Study 77I052H Windmillgrass – 2006 Harvest Germination

Accession Number	Location of Plot	Date Harvested	Pounds Harvested	3 Days %	7 Days %	28 Days %
313	PMC – C	9-21-06	0.94	62.3	72.5	72.5
313	Rio Farms	8-23-06	5.2	73.5	77.8	84.0
313	Rio Farms	10-11-06	8.6	40.5	50.0	62.3
260	Rio Farms	10-12-06	29.4	7.3	18.3	20.5

***12 hours dark 20°C (68°F) / 12 hours light 30°C (86°F)

Table 2. Study 77I052H Windmillgrass – 2006 Harvest – Dormancy Test

Accession Number	Location of Plot	Date Harvested	Time After Harvest	3 Days %	7 Days %	28 Days %
313	Rio Farms	10-11-06	2 weeks	23.5	28.0	33.8
			3 months	63.8	65.3	66.0
			6 months	59.0	67.0	68.3
260	Rio Farms	10-12-06	2 weeks	4.8	13.3	22.8
			3 months	27.5	37.5	40.0
			6 months	63.3	66.8	68.3

***12 hours dark 20°C (68°F) / 12 hours light 30°C (86°F)

Table 3. Study 77I052H Windmillgrass Advanced Field Evaluation 2007

Kingsville PMC (sandy soil)

Accession Number	% Survival	% Cover (veg. spread)	Plant Vigor*	Seed Production*
313	100	82.5	2.0	3.3
301	100	57.5	3.0	3.8
260	100	100	2.0	2.0
283	100	100	2.0	2.0

*Ocular estimate (1 = Best & 5 = Average)

Table 4. Study 77I052H Windmillgrass Advanced Field Evaluation 2007

East TX PMC (sandy soil)

Accession Number	% Survival	% Cover (veg. spread)	Plant Vigor*	Seed Production*
313	93.8	81.3	4.5	5.8
301	100	82.5	5.0	4.8
260	100	97.5	4.5	4.3
283	100	92.5	4.5	4.0

*Ocular estimate (1 = Best & 5 = Average)

Table 5. Study 77I052H Windmillgrass Advanced Field Evaluation 2007

Norias Division (sandy soil) – Emergence Plot

Accession Number	% Survival	% Cover (veg. spread)	Plant Vigor*	Seed Production*	% Seed Maturity
313	-	12.5	4.3	4.3	41.3
301	-	4.3	4.5	5.0	25.0
260	-	38.8	3.0	2.5	17.5
283	-	20.0	3.0	3.3	22.5

*Ocular estimate (1 = Best & 5 = Average)

Study Number: STPMC-P-0126-WE

Study Title: Advanced Evaluation of Gulf Cordgrass (*Spartina spartinae*)

Introduction: Gulf cordgrass (*Spartina spartinae* (Trin.)Merr. Ex A.S. Hitch.) is a robust, perennial grass up to 1.2 meters tall (Stutzenbaker, 1999). Gulf cordgrass is found from Florida to Texas and eastern Mexico (Gould and Box, 1975). It flowers from spring to summer and rarely in the fall (Correll and Johnston, 1979). In Texas, it is frequent to abundant throughout the Gulf Coast on moist saline soils, on elevated ridges, and in intermediate to saline coastal marshes (Stutzenbaker, 1999). This species tends to form extensive, dense bunches which provides suitable nesting habitat for waterfowl (Hatch, Schuster, and Drawe, 1999).

Problem: There are over 3,000 miles of coastal shoreline along the Texas Coastal Prairie. Many of these miles have eroding bluffs that need adapted plant material for stabilization. These bluffs along with coastal wetland berms and dredge spoil islands are all in need of low-cost planting techniques to provide an economical method of vegetatively stabilizing and enhancing these sites.

Most coastal revegetation projects are established with expensive transplants. If a seeded variety of a salt-tolerant grass could be developed, it would provide a low-cost technique for stabilization and enhancement of Texas coastal shorelines. Seeded plants along with turf-reinforcement matting may provide a low-cost and environmentally friendly stabilizing system for miles of eroding shorelines.

Objective: The objective is to assemble, evaluate, select and release and/or provide information on the propagation of gulf cordgrass. Gulf cordgrass collections will be evaluated for adaptation along the Texas Coastal Prairie.

Discussion: In 2004, accessions 201 and 889 were chosen for advanced evaluation. Neither had original seed and had to be divided for seed increase plots. In May of 2005, 9 of the 10 original plants of accession 201 were dug up, divided into 650 plants, and planted out in a seed increase row. In 2007, plants of 889 were divided into 681 plants and transplanted for a seed increase plot. Plants were also added to the 201 plot. Advanced evaluation plots of these two accessions is planned as soon as sufficient seed is obtained.

Technology Development Projects

Study Number: STPMC-T-0681-OT

Study Title: Activated-carbon seed treatment to improve plant establishment

Introduction: Establishment of native species has been very difficult in South Texas. There are very few native species that are available on the commercial market because of seed germination and establishment difficulties. However, the E. "Kika" de la Garza Plant Materials Center has been evaluating techniques for establishing native species in the South Texas area.

Activated carbon has shown signs that it can deactivate some herbicides. In practical terms this means, a seed grower could plant his seed field and over spray the seed row with activated carbon to protect the seeding. He could then follow with a herbicide to control weeds. Spraying at planting time would extend the weed-free period for seedling emergence giving the native species a better chance of establishment.

Problem: Establishing native species seed fields is often difficult due to the slow germination rates and seedling growth rates of native species in comparison to competing weeds.

Objective: The objective of this study is to evaluate the effects of activated carbon and five herbicides on the seedling emergence of three native grasses.

Discussion: A greenhouse study was conducted in May and June of 2007 on three native grasses with the help of Dr. Bill Ocumpaugh and Dr. James Grichar of the Texas Agriculture Experiment Station at Beeville, Texas. Seeds of plains bristlegrass (*Setaria leucopila*), shortspike windmillgrass (*Chloris subdolichostachya*), and switchgrass (*Panicum virgatum*) were planted in two rows each in trays of sterilized and sifted Raymondville clay loam. One row of each species was then spayed with a strip of activated carbon. The entire tray was then sprayed with one of five herbicides at either full or half strength. A control of no herbicide was also included. Each herbicide treatment was replicated with four trays.

The number of seedlings that emerged was recorded weekly for six weeks. Average seedling height was taken at two and six weeks. The total aboveground, dry biomass was also taken at six weeks.

Valor at both the full and half rates saw considerably more seedlings and biomass production for both bristlegrass and windmillgrass with the use of activated carbon. The results with *Valor* were less dramatic with switchgrass. *Cadre* at both the half and full rate showed an appreciable increase of seedlings and biomass production with the use of activated carbon for switchgrass. *Pursuit* at both the half and full rate showed some effect on bristlegrass and switchgrass. 2,4-D also showed some effects, especially with windmillgrass. Overall, there seemed to be an upward trend in biomass production in the activated carbon strips and a downward trend in the unprotected strips.

This greenhouse study will be followed with a field planting that will focus on the promising herbicides *Cadre, Valor*, 2,4-D, *Pursuit* and *First Rate* with activated carbon.

Herbicide/ Carbon Interaction - Grass Spp.

Seedling Count Summary

			Week 1						Week 6					
			Switchgrass		Windmillgrass		Bristlegrass		Switchgrass		Windmillgrass		Bristlegrass	
Chemical Name	**Rep**	**Tray**	Carbon	Control	Carbon	Control	Carbon	Control	Carbon	Control	Carbon	Control	Carbon	Control
1. Untreated - check	rep 1	2	32	26	15	17	50	17	35	28	25	25	53	23
	rep 2	17	20	11	7	13	43	44	23	13	20	19	58	63
	rep 3	32	23	27	22	31	51	22	24	26	28	23	52	28
	rep 4	36	30	26	19	18	50	26	27	31	23	23	56	47
Average			**26.25**	**22.50**	**15.75**	**19.75**	**48.50**	**27.25**	**27.25**	**24.50**	**24.00**	**22.50**	**54.75**	**40.25**
2. Cadre 2 AS	rep 1	6	27	22	19	9	27	21	29	10	23	13	27	10
	rep 2	21	32	21	13	12	62	19	32	8	16	9	66	17
2.0 FL OZ (1/2 X)	rep 3	25	32	24	23	12	86	58	32	14	16	9	91	26
	rep 4	40	35	19	22	13	55	58	30	18	20	20	72	70
Average			**31.50**	**21.50**	**19.25**	**11.50**	**57.50**	**39.00**	**30.75**	**12.50**	**18.75**	**12.75**	**64.00**	**30.75**
3. Cadre 2 AS	rep 1	8	20	12	24	11	26	17	23	3	27	5	33	5
	rep 2	13	33	22	22	4	59	21	38	21	24	7	62	0
4.0 FL OZ (1 X)	rep 3	30	30	23	23	17	50	41	31	21	21	23	65	12
	rep 4	35	27	14	17	11	53	37	32	14	19	21	61	22
Average			**27.50**	**17.75**	**21.50**	**10.75**	**47.00**	**29.00**	**31.00**	**14.75**	**22.75**	**14.00**	**55.25**	**9.75**
4. Pursuit 70 WG	rep 1	10	28	18	19	19	43	35	31	17	21	28	43	21
	rep 2	16	35	23	12	11	13	7	37	31	14	21	15	7
0.72 OZ (1/2 X)	rep 3	33	29	18	16	14	30	8	32	24	23	21	47	6
	rep 4	38	31	21	25	6	29	27	29	23	25	14	38	23
Average			**30.75**	**20.00**	**18.00**	**12.50**	**28.75**	**19.25**	**32.25**	**23.75**	**20.75**	**21.00**	**35.75**	**14.25**
5. Pursuit 70 WG	rep 1	11	27	20	21	1	6	29	29	25	20	14	13	31
	rep 2	12	30	15	21	13	42	13	30	18	24	17	49	4
1.44 OZ (1 X)	rep 3	27	33	22	17	5	19	4	32	17	21	14	18	2
	rep 4	37	34	19	21	2	7	27	32	9	32	10	12	23
Average			**31.00**	**19.00**	**20.00**	**5.25**	**18.50**	**18.25**	**30.75**	**17.25**	**24.25**	**13.75**	**23.00**	**15.00**
6. 2,4-D 3.8 E	rep 1	9	35	30	23	14	44	21	35	26	22	21	55	25
	rep 2	15	33	21	21	5	50	46	38	24	22	13	55	51
0.50 QT (1/2 X)	rep 3	24	20	23	28	8	39	22	22	25	26	12	47	35
	rep 4	42	25	28	16	13	25	43	24	20	25	9	38	57
Average			**28.25**	**25.50**	**22.00**	**10.00**	**39.50**	**33.00**	**29.75**	**23.75**	**23.75**	**13.75**	**48.75**	**42.00**
7. 2,4-D 3.8 E	rep 1	4	30	14	15	13	35	8	34	17	13	14	51	43
	rep 2	18	27	5	21	13	53	30	22	27	21	22	57	37
1.00 QT (1 X)	rep 3	28	35	19	24	15	23	20	36	20	23	21	24	37
	rep 4	43	34	16	18	6	12	6	35	28	20	11	18	15
Average			**31.50**	**13.50**	**19.50**	**11.75**	**30.75**	**16.00**	**31.75**	**23.00**	**19.25**	**17.00**	**37.50**	**33.00**
8. First Rate 84 WG	rep 1	3	33	17	11	7	6	27	33	21	19	14	7	29
	rep 2	20	33	21	23	20	29	22	35	26	30	24	31	22
0.40 OZ (1/2 X)	rep 3	29	27	24	9	14	20	4	24	27	12	14	42	33
	rep 4	44	28	22	10	12	7	16	27	16	13	19	13	24
Average			**30.25**	**21.00**	**13.25**	**13.25**	**15.50**	**17.25**	**29.75**	**22.50**	**18.50**	**17.75**	**23.25**	**27.00**
9. First Rate 84 WG	rep 1	5	32	27	7	14	38	45	35	28	17	19	44	60
	rep 2	19	23	26	18	14	35	44	28	32	19	22	34	46
0.80 OZ (1 X)	rep 3	23	27	10	29	10	66	39	26	21	29	16	72	35
	rep 4	41	25	8	23	27	55	34	19	11	22	24	58	29
Average			**26.75**	**17.75**	**19.25**	**16.25**	**48.50**	**40.50**	**27.00**	**23.00**	**21.75**	**20.25**	**52.00**	**42.50**
10. Valor 51 WG	rep 1	1	26	32	13	1	21	9	24	33	15	8	25	0
	rep 2	14	33	22	17	4	32	10	35	21	21	3	29	3
1.50 OZ (1/2 X)	rep 3	31	26	24	17	0	29	19	25	24	24	6	46	36
	rep 4	34	31	20	16	6	7	36	33	20	19	1	16	25
Average			**29.00**	**24.50**	**15.75**	**2.75**	**22.25**	**18.50**	**29.25**	**24.50**	**19.75**	**4.50**	**29.00**	**16.00**
11. Valor 51 WG	rep 1	7	24	23	19	4	33	17	24	23	18	5	33	6
	rep 2	22	23	29	13	2	34	3	28	17	25	1	44	1
3.00 OZ (1 X)	rep 3	26	29	26	19	2	41	0	30	12	21	1	36	0
	rep 4	39	16	23	22	1	42	8	19	20	24	6	37	5
Average			**23.00**	**25.25**	**18.25**	**2.25**	**37.50**	**7.00**	**25.25**	**18.00**	**22.00**	**3.25**	**37.50**	**3.00**

Herbicide/ Carbon Interaction - Grass Spp.
Biomass Summary Final Aboveground Weight (in grams)

			Switchgrass		Windmillgrass		Bristlegrass	
			Carbon	Control	Carbon	Control	Carbon	Control
Chemical Name	**Rep**	**Tray**	Avg	Avg	Avg	Avg	Avg	Avg
1. Untreated - check	rep 1	2	0.727	0.799	2.469	1.262	1.179	0.561
	rep 2	17	0.247	0.262	0.796	2.424	0.914	1.072
	rep 3	32	0.287	0.393	0.251	0.265	0.475	0.523
	rep 4	36	0.423	0.392	2.887	3.339	0.895	0.876
Average			**0.421**	**0.462**	**1.601**	**1.823**	**0.866**	**0.758**
2. Cadre 2 AS	rep 1	6	0.483	0.119	2.882	0.072	1.682	0.078
	rep 2	21	0.432	0.112	1.568	0.242	0.804	0.125
2.0 FL OZ (1/2 X)	rep 3	25	0.773	0.061	1.321	0.185	1.392	0.284
	rep 4	40	0.421	0.157	4.088	0.133	0.672	0.333
Average			**0.527**	**0.112**	**2.465**	**0.158**	**1.138**	**0.205**
3. Cadre 2 AS	rep 1	8	0.380	0.010	4.055	0.016	1.147	0.019
	rep 2	13	0.536	0.110	3.019	0.018	0.734	0.002
4.0 FL OZ (1 X)	rep 3	30	0.384	0.050	1.306	0.109	1.065	0.023
	rep 4	35	0.436	0.040	2.041	0.126	0.557	0.066
Average			**0.434**	**0.053**	**2.605**	**0.067**	**0.876**	**0.028**
4. Pursuit 70 WG	rep 1	10	0.769	0.188	1.926	0.184	1.394	0.107
	rep 2	16	0.461	0.342	3.230	1.092	0.317	0.053
0.72 OZ (1/2 X)	rep 3	33	0.589	0.243	4.737	0.722	0.643	0.042
	rep 4	38	1.070	0.381	3.050	0.144	0.576	0.237
Average			**0.722**	**0.289**	**3.236**	**0.536**	**0.733**	**0.110**
5. Pursuit 70 WG	rep 1	11	0.411	0.183	6.418	0.066	0.380	0.208
	rep 2	12	0.377	0.113	3.055	0.074	0.332	0.010
1.44 OZ (1 X)	rep 3	27	0.712	0.200	3.377	0.057	0.347	0.000
	rep 4	37	0.736	0.030	1.220	0.043	0.344	0.108
Average			**0.559**	**0.132**	**3.518**	**0.060**	**0.351**	**0.082**
6. 2,4-D 3.8 E	rep 1	9	0.394	0.222	2.513	1.272	0.764	0.237
	rep 2	15	0.881	0.445	6.788	2.325	0.819	0.836
0.50 QT (1/2 X)	rep 3	24	0.608	0.662	2.330	1.241	1.212	0.534
	rep 4	42	1.225	0.575	3.053	0.342	2.263	1.454
Average			**0.777**	**0.476**	**3.671**	**1.295**	**1.265**	**0.765**
7. 2,4-D 3.8 E	rep 1	4	0.708	0.207	3.745	1.438	1.201	0.458
	rep 2	18	1.214	0.365	3.621	0.819	0.891	0.911
1.00 QT (1 X)	rep 3	28	0.694	0.357	1.791	1.852	0.337	0.434
	rep 4	43	0.736	0.435	1.466	3.005	1.049	0.475
Average			**0.838**	**0.341**	**2.656**	**1.779**	**0.870**	**0.570**
8. First Rate 84 WG	rep 1	3	0.616	0.459	2.734	2.002	0.457	0.527
	rep 2	20	0.833	0.372	0.991	1.196	0.605	0.399
0.40 OZ (1/2 X)	rep 3	29	0.208	0.307	1.709	3.717	0.578	0.223
	rep 4	44	1.025	0.600	1.537	0.978	0.777	0.785
Average			**0.671**	**0.435**	**1.743**	**1.973**	**0.604**	**0.484**
9. First Rate 84 WG	rep 1	5	0.620	0.400	2.218	1.858	0.680	0.588
	rep 2	19	0.788	0.910	1.696	2.801	1.036	0.707
0.80 OZ (1 X)	rep 3	23	0.767	0.334	1.719	1.689	1.193	0.788
	rep 4	41	0.792	0.312	6.083	0.554	0.565	0.253
Average			**0.742**	**0.489**	**2.929**	**1.726**	**0.869**	**0.584**
10. Valor 51 WG	rep 1	1	0.578	0.518	2.762	0.130	0.788	0.000
	rep 2	14	0.784	0.509	4.808	0.205	0.684	0.051
1.50 OZ (1/2 X)	rep 3	31	0.356	0.302	0.360	0.023	0.751	0.202
	rep 4	34	0.689	0.388	3.714	0.025	0.375	0.410
Average			**0.602**	**0.429**	**2.911**	**0.096**	**0.650**	**0.166**
11. Valor 51 WG	rep 1	7	0.656	0.454	3.462	0.680	0.853	0.070
	rep 2	22	0.795	0.374	3.546	0.001	1.107	0.000
3.00 OZ (1 X)	rep 3	26	1.316	0.235	3.719	0.361	1.604	0.000
	rep 4	39	0.736	0.375	1.514	0.009	1.236	0.035
Average			**0.876**	**0.360**	**3.060**	**0.263**	**1.200**	**0.026**

Study Number: STPMC-T-0682-RA

Study Title: Techniques for evaluating seedlings for salt tolerance

Introduction: There is an estimated 600 thousand acres in South Texas that are effected by saline and alkaline conditions. Many of these acres are damaged by past oil field activity. These sites are characterized by soils with high salinity, little soil structure, lack of vegetation, and excessive erosion. Establishment of vegetation in saline sites by direct seeding poses a challenge. The high concentration of dissolved salt in the soils, in particular Na ions, hinders seed germination. Temperature and soil moisture also interact with salinity, producing a significant but highly variable environmental window for seed germination and seedling survival.

Problem: Adapted plant varieties and tested technology are needed to address the erosion problems on these critical sites. Adapted plant varieties need to be evaluated for salinity tolerance for seed germination and at the young seedling stage.

Objective: Assess seed germination characteristics under saline conditions for 21 adapted South Texas species.

Discussion: After the germination chamber trials were completed a greenhouse study was conducted in 2006 and 2007. The greenhouse study focused on evaluating seedling responses of 21 native and introduced plant species to elevated saline conditions. Three ebb-flow tables were set to water at one of three levels of sea salt solutions: 0, 15, and 30 dS/m. Plants were seeded in 98 conetainers per tray and then the trays were randomly placed on the tables with 4 replicates per species per table. Plant survival and biomass production were evaluated over a 4 month period during May-Aug 2006 and March-July 2007.

Once the data from this study is analyzed it should provide critical information on the plant species that exhibit the most salinity tolerance. These species may have the best chances for establishment on salt-affected soils. Results from this study will assist in the restoration of soils affected by salinity and provide important vegetative cover over areas prone to erosion.

Study Number: STPMC-T-0704-RA

Study Title: Evaluation of three endemic plants of the Refugio-Goliad Prairies

Introduction: The Coastal Prairie Conservation Initiative (CPCI) is a partnership between the Grazing Lands Conservation Initiative (GLCI), the U.S. Fish and Wildlife Service (USFWS), Texas Parks and Wildlife Department (TPWD), the Natural Resources Conservation Service (NRCS), and private landowners formed to restore habitat in the Refugio-Goliad prairies. A measure of success for this initiative is the establishment or expansion of existing populations of three focal species. Initial efforts have centered around improving habitat for the release of Attwater's prairie chicken. Additional effort is now being focused on two endemic forbs of the Texas coastal prairie; plains gumweed (*Grindelia oolepis*) and threeflower broomweed (*Thurovia triflora*), and one endemic shrub; Texas peach bush (*Prunus texana*).

Two variants of the Texas Gulf Coast Prairie support plant species absent from other sites. Claypan prairie sites, particularly those on soils mapped as somewhat saline and/or sodic fine sandy loams of the Orelia series, are common on the Beaumont surface of the southern part of the project area. These soils tend to pond water in wetter seasons but become hard as concrete in hotter, drier months. As a result, the vegetation is generally sparser and somewhat more stunted than elsewhere, and it is often dominated by species that are absent from or scarce in other sites. Common components of claypan flats include goldenweed (*Isocoma drummondii*), whorled dropseed (*Sporobolus pyramidatus*), threeflower broomweed (*Thurovia triflora*), Texas willkommia (*Willkommia texana*), narrowleaf sumpweed (*Iva angustifolia*), and horse-crippler cactus (*Echinocactus texensis*). Gulf cordgrass (*Spartina spartinae*) is often present in the surrounding matrix, further evidence of the interesting soil chemistry in these areas.

Threeflower broomweed (*Thurovia triflora*) is an odd little annual that bears little resemblance to other broomweeds of the region, neither in stature nor flower color. It is tiny, seldom more than 4 or 5 inches tall, and has small white flower-heads, whereas the other local broomweed species (*Gutierrezia texana* and *Amphiachyris dracunculoides*) are generally at least a foot tall and bear larger yellow flower heads. It also differs in habitat. Unlike the others, which are weedy generalists that increase under heavier grazing regimes, threeflower broomweed tends to be restricted to slightly saline or sodic soils that occur in small patches within a nonsaline soil matrix. It has been reported from about 30 places in the following counties: Aransas, Brazoria, Calhoun, Galveston, Harris, Jackson, Matagorda, Refugio, San Patricio, and Waller counties.

Plains gumweed is a rhizomatous perennial forming small clumps. Its stems are no more than one foot tall, with alternate leaves that are narrowly oblanceolate and sparingly toothed. The flower heads are solitary at the tips of the stems and are ¾ inch wide or less. The flower heads are not as resinous as those of other gumweeds. It seems to occur mostly in ephemeral wet spots in coastal prairies on clayey soils. It is endemic to the Texas Gulf Coastal Plain in Bee Cameron, Jim Wells, Nueces, Refugio, and San Patricio counties.

Texas peachbush is endemic to the Rio Grande Plains and Edwards Plateau where it may grow in poor or disturbed soil. It is a dwarf, bushy shrub having very irregular branches and greyish bark. It grows to a height of three feet and a width of two to four feet. Young branches are light grey and conspicuously covered with short, stiff hairs. Texas peachbush opens its white or pink blossoms just before unfolding its leaves in spring. Its edible, peach-like fruits ripen in June and are reported to make excellent preserves.

Plains gumweed is on the Texas watch list for rare and endangered species. Three flowered broomweed and Texas peach bush are endemic species that have limited populations (21-100) and thus make the species vulnerable to depletion and loss.

Populations of plains gumweed, threeflower broomweed and Texas peach bush will be assessed for ecosite characteristics. The soils will be monitored for salinity, moisture and texture. Vegetative structure as well as species composition and diversity will also be characterized at these sites. Seed will be harvested from each population and the seed fill, viability, dormancy and germination will be determined. After assessing and determining site characteristics, randomized replicated plots of both seeded and transplanted material will be established at the appropriate locations. Plant establishment, survival and reproduction will be recorded from these sites. This study should help determine the necessary requirements for maintaining and restoring suitable sites for these Texas coastal prairie endemic species.

Objective: The purpose of this study is to collect data pertaining to the taxonomy, morphology, habitat and reproductive biology of these three plant species in order to aid in the restoration, stabilization and maintenance of their populations.

Discussion: Populations of plains gumweed, threeflower broomweed, and Texas peach bush were located in Refugio County in 2007. These sites will be monitored in 2008 and seed will be collected.

Study Number: STPMC-T-0705-RANU

Study Title: Forage quality study of selected South Texas plants

Introduction: There is little forage yield and nutritive information available for native South Texas warm season grasses. This information is needed to strengthen the USDA/NRCS efforts to document these grasses and promote their use as native forage sources for Texas ranchers. This information is needed for NRCS programs such as: Forage Suitability Group Descriptions, National Soil Information System, Ecological Site Information System, Prescribed Grazing Plans, Pasture and Hay Planting, Range Seeding, Web Soil Survey, Grazingland Spatial Analyses, and Nutritional Balance Analyzer. Many of the grass species currently used by ranchers are introduced species. Helpful information is needed so that ranchers can make informed decisions about native forages.

Problem: Forage yield and nutritive information is needed for native South Texas warm season grasses. This information would strengthen USDA/NRCS efforts to promote their use as native forage sources for Texas ranchers.

Objective: The objective of this study is to establish growth curve plots for South Texas grasses and document the monthly phenological state for these grasses as well as assess the plot biomass and crude protein and digestibility.

Discussion: In the spring of 2007 five native grasses were chosen for analysis; shortspike windmillgrass, plains bristlegrass, multiflowered false Rhodesgrass, silver bluestem, and pink pappusgrass. Seed of these species was collected from South Texas and then sown in pots in the greenhouse at the Kika de la Garza Plant Materials Center. These plants were then transplanted into 4 replicated plots at the Texas Agricultural Experiment Station at Stephenville. Each plot is subdivided into eight quadrants. Monthly clippings will be randomly assigned to each quadrant from April through November of 2007. The clippings will be analyzed in 2008. Yield response to fertility, growth patterns, and nutritive values will be studied for each species of grass. Nitrogen and in- vitro dry matter digestibility will be measured. In-vitro dry matter digestibility will be determined using the Daisy II Incubator with rumen fluid from goats or cattle.

Presentations for STPMC in FY 2007

Date	Title	Presenter(s)
10/19/06	Native Plant Releases for South Texas	S. Maher
10/20/06	Seed Collection Workshop for Texas Master Naturalists	S. Maher and J. Lloyd-Reilley
11/09/06	Plant Materials Release for South Texas Rangelands	Paula Maywald
12/04/06	Screening South Texas Native Plant Seedlings for Salinity Tolerance	LeeRoy Rock
12/06/06	Riparian Vegetation Characteristics in South Texas	J. Lloyd-Reilley
12/10/06	Bioengineering Approach to Coastal Shoreline Stabilization	Eddie Seidensticker
02/27/07	What's New from the South Texas PMC	J. Lloyd-Reilley
03/13/07	Native Seed - A Reality (Field Day/Tour)	Bob Escheman
03/14/07	South Texas Riparian Workshop	J. Lloyd-Reilley
06/28/07	What's Happening at the Kika de la Garza PMC	J. Lloyd-Reilley
07/19/07	The Logistics in Seed Production for South Texas Ecotypic Releases	S. Maher
07/23/07	Coastal Prairie Conservation Initiative	J. Lloyd-Reilley
09/06/07	Establishing Priorities at the Kika de la Garza PMC	J. Lloyd-Reilley
09/11/07	Seed Fill Workshop	J. Lloyd-Reilley
09/14/07	Invasive Species Work at the Kika de la Garza PMC	J. Lloyd-Reilley

Publications for STPMC in FY 2007

Title	Author(s)
NRCS Species for Plant Collection - Partridge Pea	S. Maher
NRCS Species for Plant Collection - Plains Lovegrass	S. Maher
NRCS Species for Plant Collection - Seashore Dropseed	S. Maher
NRCS Species for Plant Collection 2008 - Eastern Gamagrass	S. Maher
NRCS Species for Plant Collection 2008 - Frostweed	S. Maher
NRCS Species for Plant Collection 2008 - Green Sprangletop	S. Maher
NRCS Species for Plant Collection 2008 - Virginia Wildrye	S. Maher
NRCS Speices for Plant Collection 2008 – Gayfeather	S. Maher
Plant Profile: Canada Wildrye for Native Plant Society of Texas	S. Maher
Plant Profile: Hooded Windmillgrass for Native Plant Society of Texas	S. Maher
Plant Profile: Little Bluestem for Native Plant Society of Texas	S. Maher
Plant Profile: Orange Zexmenia for Native Plant Society of Texas	S. Maher
Plant Profile: Roundhead Prairie Clover for Native Plant Society of TX	S. Maher
Plant Profile: Slender Grama for Native Plant Society of Texas	S. Maher
Plant Profile: Indian Globe Mallow for Native Plant Society of Texas	S. Maher
Screening South Texas Plant Seedlings for Salinity Tolerance - CKWRI	L. Rock, J. Lloyd-Reilley and S.D. Nelson
Seed Germination Responses to Varying Levels of Salinity - CKWRI	L. Rock, J. Lloyd-Reilley and S.D. Nelson
Variations in Salinity for Soils in Zapata County - CKWRI	L. Rock, J. Lloyd-Reilley and S.D. Nelson
Evaluation of 3 Endemic Plants of the Refugio-Goliad Prairies - CKWRI	J.E. Pittman, J. Lloyd-Reilley and T.E. Fulbright
Notice of Release of Chaparral Germplasm Hairy Grama – STN	P.Maywald and F.Smith
Notice of Release of La Salle Germplasm Arizona Cottontop – STN	P.Maywald and F.Smith
Notice of Release of Atascosa Germplasm Texas Grama – STN	P.Maywald and F.Smith
Notice of Release of Dilley Germplasm Slender Grama – STN	P.Maywald and F.Smith
Interspecific Competition Along South Texas Roadsides – CKWRI	A.S. Lund, T.E. Fulbright and J. Lloyd-Reilley

Publications for STPMC in FY 2007 (continued)

Title	Author(s)
Replacing Bermudagrass with Windmillgrasses Along TX Right-of-Ways – CKWRI	A.S. Lund, T.E. Fulbright and J. Lloyd-Reilley
Evaluating Native Windmillgrasses for Revegetating TX Right-of-Ways – CKWRI	A.S. Lund, T.E. Fulbright and J. Lloyd-Reilley
Evaluation of Windmillgrasses for Sustainable Long-term Results – CKWRI	A.S. Lund, T.E. Fulbright and J. Lloyd-Reilley
Plains Bristlegrass Seed Yield Response to Nitrogen Fertilization in in Texas - CKWRI	J.A. Lopez-Garcia, J. A. Ortega-Santos, W.R. Ocumpaugh and J. Lloyd-Reilley
Erosion Control/Water Quality Improvement on Saline Agricultural Land - ASA-CSSA-SSSA Annual National Meeting, Indianapolis, IN.	L. Rock, J. Lloyd-Reilley and S.D. Nelson
Forage Yield, Nutritive Value and Growth Pattern of Five Native Warm Season Grasses – CKWRI	A.E. Lee, J. Lloyd-Reilley, B. Lambert and J.P. Muir
STN Releases First Seed Varieties for Public Use - News Release	J. Navejar
Gulf Coast Ecosystem Study Report	J. Lloyd-Reilley and S. Maher
King Ranch Progress Report	J. Lloyd-Reilley and S. Maher
Texas Coastal Prairie Ecotype Project	J. Lloyd-Reilley and S. Maher
Semi-Annual Report to TxDOT	A. Lund, T. Fulbright and J. Lloyd-Reilley
2006 Progress Report of Activities	J. Lloyd-Reilley and S. Maher
2006 Annual Technical Report	J. Lloyd-Reilley and S. Maher
Catarina Blend Bristlegrass release brochure	J. Lloyd-Reilley and S. Maher
Falfurrias Germplasm Big Sacaton release brochure	J. Lloyd-Reilley and S. Maher
Kinney Germplasm False Rhodes Grass release brochure	J. Lloyd-Reilley and S. Maher
Lavaca Germplasm Canada Wildrye release brochure	J. Lloyd-Reilley and S. Maher
Mariah Germplasm Hooded Windmillgrass release brochure	J. Lloyd-Reilley and S. Maher
Welder Germplasm Shortspike Windmillgrass release brochure	J. Lloyd-Reilley and S. Maher
Atascosa Germplasm Texas Grama release brochure – STN	F. Smith & P. Maywald
Chaparral Germplasm Hairy Grama release brochure– STN	F. Smith & P. Maywald
Dilley Germplasm Slender Grama release brochure– STN	F. Smith & P. Maywald
La Salle Germplasm Arizona Cottontop release brochure– STN	F. Smith & P. Maywald
The Logistics in Seed Production for South Texas Ecotypic Releases Native Wildflower Seed Production Research Symposium	J. Lloyd-Reilley and S. Maher
Zapata Progress Report. Zapata SWCD	J. Lloyd-Reilley
Improving Germination in Windmillgrass Ecotypes. Rangeland Ecology & Management, 59(6) November, 2006.	F. Herrera, W.R. Ocumpaugh, J.A. Ortega-S., J. Lloyd-Reilley, G.A. Rasmussen, and S. Maher